

**American International Health Alliance
Neonatal Resuscitation Program (NRP)**

**Site Evaluation Report – February 2002
Samara, Ulan Ude, Chelabinsk – Russia**

Objective of Evaluation Visits:

To evaluate the clinical impact of the Neonatal Resuscitation Program on neonatal outcomes. Components of the assessment to include:

- evaluation of the training activities in each Region,
- clinical application in hospitals where staff have been trained (preparation of staff and equipment, knowledge and skill of staff), and
- outcomes (neonatal morbidities and mortality).

Strategies:

The trip included visits to three NRP Training Centers in Russia, (Samara, Ulan Ude, and Chelabinsk). Assessment of the NRP Training centers included discussion and review of teaching methods and plans, structure of courses provided, goals for 2002, and overall equipment and Center needs.

Site visits to hospitals where providers have been trained in NRP provided the arena for assessment of clinical application. At each site the percentage of staff trained was determined and the delivery room set up and equipment was assessed. The knowledge and skill of the staff was assessed through patient discussion and actual observation of delivery room management of infants when possible.

Neonatal outcomes were discussed at each hospital (changes in mortality and morbidity) and staff perceptions as to the impact of NRP on these outcomes as well as other needs and issues was elicited. Mortality statistics were available in some instances.

Site Summaries - Samara, Russia

Sites visited in Samara and the Region included Samara Oblast Clinical Hospital (Maternity House, Oblast Children's Hospital and Perinatal Center; NRP Training Center located here), and Piragov City Maternity Hospital. The Chief Pediatrician for the Regional Health Department, Ludmilla Katkova accompanied us and arranged the visits. She is very involved in this program and Health Administration support for the NRP Training Center activities is clearly evident.

I. NRP Training Center and Activities:

The NRP Training Center in Samara is located in the Oblast Children's Hospital which is affiliated with Samara State University. The Director of the Center is a faculty member at the University and the instructors practical trainers, (neonatologists from the Children's Hospital as well as the Maternity Hospital).

The instructors in Samara were very vocal about their belief that a mix of both academician and clinicians should be instructors for this course due to the strong clinical content. They have also trained the Chief Nurse of the Oblast Hospital as an instructor but have not included her in training as yet. They were very forthcoming that they felt nurses should be trained. In fact they felt it would be beneficial for nurses and midwives to see other nurses and midwives as instructors. They commented on the model used in L'viv, Ukraine where nurses and physicians were trained together and believe that is a good model which also reinforces the team concept. The barrier to this type of training for them is getting nurses released from their duties by chief physicians who may not have the same beliefs. An alternative they are considering is training nursing faculty so they could then train nurses in post graduate education.

According to the instructors, all physicians (neonatologists) and midwives in Samara have gone through the NRP training but they were unable to provide us numbers during the visit. Their numbers will be forwarded to the Moscow office. Pre-assessment of students is used routinely in Samara to tailor the courses to the students. Student's needs are determined more effectively with the pre-assessment and courses designed to focus on these needs. The standard course content is used but the focus on specific lessons stressed based on the pre-assessment findings. The instructors have found that medical staff (neonatologists) do not often need the full range of training as they grasp the concepts quicker. The number of neonatologists in the region is low however, therefore training has been focused on obstetricians, midwives (who generally are in charge of the baby) and nurses.

During the actual training the instructors introduce the changes in resuscitation of newborns based on the "Precause" which was issued by the Ministry of Health (MOH). They provide the explanation of why the changes in the guidelines have come about which helps to reinforce them. The "Precause" is the official support needed for actual practice changes.

The audiovisual equipment in the center is old; the old video (dubbed in Russian), but instructors spend a lot of time trying to explain the differences, old slides (but will be able to use the new overheads when they receive the overhead projector). The instructors have developed a course evaluation which they use so students can comment on what should be changed as well as how the instructors perform as teachers. The most frequent comment is the need for more time (days) for this course for practice at the stations. The center has enough manikins, however they would like to establish an instructor in each birth house, but identified the need for equipment in each place for adequate training. In Samara Region there are 27 rural, 8 city, 3 in Taliatsi, and 7 maternity houses in Samara alone. A significant amount of equipment for course in each hospital would be needed. The instructors have been considering alternative. All maternity hospitals in the Region have NRP books.

Post-graduate training for physicians, nurses and midwives includes NRP as a compulsory portion. One hundred fifty nurses and midwives have completed the training.

The center course records were very good and are used by the post graduate courses to give physicians credit for taking this course. This is a good example of how academicians and the NRP TC faculty can work together.

The Director described for us an evaluation process which is done in the case of an infant's death. If an infant dies and mistakes in the resuscitation are identified, records are reviewed to determine if the physician had been trained in NRP. If so, then remediation is set up and if not then the physician is included in the next NRP course.

Outreach education: They have negotiated and completed outreach activities in the region. One-to-two outreach seminars per month are conducted in their region. They also hold seminars for neonatologists at the center. The Director negotiates with the Heads of Hospitals to do this training. Generally the training is 3 days, with no limits on working hours. Books are given ahead of time for students to prepare and pretests are completed so the instructors can tailor the course for the students' needs. The average is 2 lessons each day and a lot of time is devoted to reviewing mistakes and ensuring understanding of concepts. After the seminar the NRP TC instructors assess the unit with the local staff and make recommendations on practice, equipment needed and set up. They have completed this type of seminar in 27 hospitals and are now planning for recertification.

The instructors try to evaluate statistics collected but know that there is no standard way in which the statistics are collected so it is difficult to use them for anything valuable.

The MOH also has legalized the NRP centers and their work, which supports and directs the training of staff. The Instructors shared the expansion of their role in the assessment and evaluation of the equipment in the delivery room setting with us and noted that they make recommendations (based on this assessment) to the hospital administrator, e.g. what equipment and supplies are needed. The MOH supports this effort by the instructors and encourages administrators to act on these recommendations.

The instructors assess staff retention of information from the courses using manikins and if there is a delivery, they will work side by side with the staff in the delivery room for the assessment.

The NRP Training Center instructors are on staff of the Neonatal Center so they are asked to consult on many infants who are born within the region. They feel this is an opportunity to reach a lot of clinicians and teach them about issues related to newborn care as well as NRP.

II. Clinical Application of the Guidelines: The Ministry of Health (MOH) Order which directs the care of newborns in Russia supports the implementation of the NRP guidelines and this ensures clinicians can then practice according to the guidelines.

A. Staff Training

The head physicians of the hospitals visited had attended the original training done by the Norfolk Partners years ago. Many of these physicians were sent back to train their own staff. However by self report were

unsure of how to go about disseminating the information to their staff. They had no real training to be teachers or supplies. They were unsure of the methodology to use. This has been a common problem in many clinical teaching programs over the years. The method was to teach someone the principles and then they would go out and teach others. Educational theory has directed the development of the Train the Trainer model and this has been reinforced for us during every NRP TC evaluation visit.

In most of the city hospitals few, if any obstetricians were trained in NRP. The rationale is they rarely participate in resuscitation of newborns as there is a neonatologist 24 hours a day responsible for this role along with a nurse, midwives and/or occasionally an anesthesiologist.

B. Staff Knowledge and skill

In the Oblast Clinical Maternity Hospital, we were able to observe the emergency birth of an infant. The head neonatologist had been trained early in the NRP course roll-out and was quite knowledgeable in the guidelines. The birth, was attended by a fairly new neonatologist and a neonatal nurse. Although the experienced neonatologist wanted to help we were able to coach her away. This young team performed well and without any coaching. It was apparent the nurse had been involved in many deliveries and assisted the neonatologist in the management of the infant. In general this staff was very knowledgeable and well prepared.

C. Equipment

Most places had ambu bags and masks, although they were well used and in some cases not functional (torn reservoirs, old non-cushioned masks.) No place had manometers for their ambu bags which would allow them to measure and control to some extent the pressures at which infants were bagged with positive pressure.

Central oxygen was available as well as suction machines. Although most were very old, all were in working condition.

Laryngoscopes were available but generally not in the delivery rooms. The neonatologist would bring it with them when they came to attend a delivery.

In rare instances we discovered the meconium aspirator. In most cases they have adapted this practice and used a different adaptor to insert into the end of the endotracheal tube to aid in suctioning.

We learned here in Samara that through a federal program a certain amount of money is allotted for each delivery and that hospital administrators decide how to use that money to purchase supplies. This was the first time we noticed an abundance of disposable supplies and equipment in the delivery room. When questioned we were told that Samara is the 3rd leading City in HIV infections and these measures were necessary to protect the infants and staff.

All delivery rooms had some type of heat source, which was mobile and seemed to be used even when the infant was well. The people in the region identified their struggle (8 years) to stress the importance of

thermal management of the infant and keeping the infant warm after delivery. They have implemented skin-to-skin care in the delivery room and use the heat lamp over both mom and baby to maintain a warm environment.

Fetal Monitoring has become routine in Samara (10 years) and cesarean section rates in Samara ranged from 17% to 30 %. The rate of infants born with asphyxia is unknown to them but they do not recall any cases in the past few years.

Unusual findings: We were introduced to a new therapy, “Dry Immersion,” where infants are placed in a warm water bath which was covered by a plastic sheet (similar to a hammock) to assist with tremors. Evidently this was someone’s research which is now in practice. Also the staff are using liquid aspirin to help in drying the umbilical cord. We did not observe these practice in the remaining site visits outside of this region.

III. Outcomes: We discussed with the Head Pediatrician of the Region and the Instructors some statistics which may lend to the evaluation of this program’s impact. They described an interesting scenario: In 2000, there were 638 infants admitted to the Samara Neonatal Center for care. In 2001 this number increased to 740. They cited 5 hospitals where training in NRP had occurred (in fact teams of people were trained, both physicians, midwives and nurses). The Early Neonatal Mortality in these hospitals has decreased and the number of infants transferred to the Neonatal Center increased. Conversely, in 5 regional hospitals where only a few people or the chief physician was trained, Early Neonatal Mortality increased and the number of infants transferred to the Neonatal Center remained the same. Infant Mortality for the region has decreased from 5.6 /1000 in 2000 to 4.3/1000 in 2001 (decrease by 10%). They could identify hospitals within their region where staff were not trained in NRP and the Infant Mortality had increased by 10%. We also discussed the impact of other programs on infant Mortality and need to keep this in mind when quoting these statistics. In the Region, we obtained statistics at Pirogov Maternity Hospital. In general, their Infant Mortality Rate has decreased and when asked what they felt was the reason they identified the following: a.) Antenatally- the women’s wellness centers, b.) Intranatally - Neonatal Resuscitation Program and c.) Postnatally - many of the WHO efforts related to mother infant care (breastfeeding, mother baby care together etc). One must be cautious in assuming any one effort is responsible for the decrease in Infant Mortality and realize it may be the collective efforts of all the new programs which have made the difference. The infant mortality numbers shared are below.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Infant Mortality	36%	34 %	25%			17%	5.6%	9.8%	12.8%

Early Neonatal Mortality was 5.5% in 2001 and is perhaps a better indication of the impact of NRP training. Staff training in NRP began in 1996. There have

been many changes in newborn care since 2000, which may account for the increase in mortality at the beginning of the decade. Twice as many infants were being transferred to the Oblast Children's Hospital. Many of these infants in the past would have died in the Region. Some of these infants will survive and some will not. Better transfer criteria have been established and followed and they are planning to assess the impact.

Site Summaries - Ulan Ude, Russia

Sites visited to evaluate NRP in Ulan Ude were the Buryatian Republic Perinatal Center, the City Maternity Hospital, the Republic Neonatal Center and Kabansky City Maternity Hospital (Rusal). We met with the Minister of Health of the Buryatian Republic, who was extremely grateful for the assistance, is supportive of the NRP initiative, and understanding of the needs of Maternal Child Health. The Chief Pediatrician of the Republic, Larissa Parapanova, arranged the visits and accompanied us to some of the sites. She appears to be involved in supporting the program. A unique finding in this Republic is the lack of one hospital as a designated NRP Training Center and no designated NRP TC Director.

The Buryatian Republic is quite vast and NRP training as well as the transport of infants from remote areas of the region challenging. The area is quite poor, but the people extremely eager to improve the services to women and children. During all of our site visits they were quite eager to share information and full of clinical questions.

I. NRP Training Center and Activities: Three hospitals in the city of Ulan Ude have training facilities and instructors which seem to function as satellites. All were trained by the Rhinelander partners, who we had met with in Washington (at the request of AIHA) prior to the start of their activities. The objective was to ensure a standard NRP roll-out. Coordination for the NRP program in Ulan Ude is very loose and seems to originate from the Chief Pediatrician of the Region. When there are practitioners from the Region coming for training they are divided between the centers to ensure the appropriate instructor:student ratio. Each mini-center has a station of equipment and supplies, tests and keeps their own records. They also maintain statistics for their hospital and training, but there is little, if any, coordination of statistics in the Region. Each site seems to be teaching the content similarly, although the instructors never meet or discuss formally the training. In a sense they almost seemed to be competing to show us the best program.

Our recommendation is that one site be designated as the NRP Training Center for Ulan Ude and one physician designated as the Director. The Oblast Neonatal Center seems the best choice due to the formal connections in the Oblast. The head Neonatologist for the Republic is the Head of the Neonatal Center and seems the likely candidate to coordinate NRP activities. Their facilities seem large enough to accommodate larger classes, although satellite centers should be able to continue to function. The formal coordination would make communication and financial (resource) coordination easier. The Neonatal Center also has taken on the responsibility for training in the Oblast and had a plan outlined (hanging on the wall) for implementation in the year 2002.

Each of the satellite centers has equipment for 1-2 skill stations, however they have no audio visual equipment support. Some of them use the chalk boards, others have drawn diagrams from within the textbook for teaching aids. Not having one center also complicates the audiovisual support as it is unlikely equipment could be purchased for all 2 sites. They do provide the lectures but also do not have enough manuals therefore they are distributed at the beginning of the courses.

One of the satellite centers uses the pretest format and has modelled the courses after what we taught. They felt this gave them better structure on how to proceed and validated our thought that most instructors who were taught the provider course were not well trained as instructors.

In one site they were very honest and told us that the laryngoscope they have for teaching was used in the clinical setting but they bring it back to the classroom when they teach a course.

They would benefit from a new video, more manuals and audiovisual support.

The Medical College is very new in Ulan Ude so there is little affiliation with the centers. Statistics on courses are kept by each separate center and each had put together an elaborate chart of mortality statistics for our visit.

Clinical Application of NRP:

A ministry of health precause mandates a neonatologist at every delivery.

Training of staff – focus has been on training the neonatologist and pediatricians in the NRP guidelines. A few obstetricians have been trained in the Perinatal center but since they do not attend deliveries routinely it is felt there is little need. The Anesthesiologist's training is sporadic. In some facilities all have been trained, in others there seems to be a feeling there is no need since they receive this training in medical education. Midwives who participate in the care in the delivery room are trained and in the rural areas one finds nurses are trained. Much of the specifics in who is trained is focused on who will participate or whose is responsible for resuscitation.

At the Neonatal Center all nurses (70) and neonatologists (15) have been trained in NRP. Although there is no delivery service here these individuals make up the transport team for sick infants from the region and have the most exposure to teaching staff when they are asked to come for referrals. One of the neonatologists accompanied us into the region. The ambulance however for transport is basic and has no monitor, ventilator or oxygen supply. This may add to the difficulty in transporting infants from the region and remote areas. Transport and non transport of sick infants is an issue which is adding to the infant mortality and morbidity significantly.

In the city Maternity hospitals there is a definite team for neonatal resuscitation. The Anesthesiologist heads the team and the neonatologist always assists. These 2 people are in the hospital 24 hours a day.

We did find the new algorithm hanging in one maternity hospital delivery room. The neonatologist in the city maternity hospitals attends all deliveries and not all equipment is kept in the delivery rooms. Basic equipment to begin resuscitation is there but the neonatologist brings a bag with the laryngoscope and blades as well as Endotracheal tubes.

Most delivery rooms have warmers, and oxygen source and bag and mask to begin resuscitation. Premature infant masks are rarely found and in fact we only saw 1 in all the

hospitals. There are clocks for apgar scoring . All other equipment is brought by the neonatologist.

Temperature management is always difficult but in the Buryatian Republic we seemed to consistently get the answer that temperature is assessed in the delivery room and in a few we did find a thermometer.

In all maternity hospitals there is a mini type NICU which is equipped with ventilator, monitor and basic equipment needed to care for sick infants. Although this is used rarely it is needed since the transport of sick infants is difficult due to the order which discourages the transport of sick infants, the distance to the Neonatal Center, limitations in beds in the neonatal center and the road conditions in the Region. The whole system of neonatal transport impacts the mortality in this region (as well as others in Russia). They seem to be transporting infants at 5-7 days of life who are really well to keep infection rate in Maternity Hospitals down and not transporting those very sick infants earlier who would benefit from NICU care. These infants often die.

The District Hospital was “well prepared” for a visit. However, as we discussed practicalities of their own equipment and set up, it was apparent the staff were very unfamiliar with the equipment they had carefully set up for us, could not explain it’s purpose and use, and in general not very knowledgeable of the principles of NRP. An instructor from the Neonatal Center who is also a practicing neonatologist accompanied us and was able to identify learning needs herself. We actually recommended that for smaller maternity hospitals, with a small number of deliveries, a 2 – 4 week training period in a larger city maternity hospitals and in the neonatal center would go a long way in assisting them to incorporate the NRP principles into their practice. We have used this strategy in Western Ukraine with both a nurse and physician team and this works well. During the discussion of meconium stained amniotic fluid, this institution reported no infants with this problem. The incidence in the world is about 30% of all births have meconium in the amniotic fluid. The neonatologist who accompanied us validated this statistic and stated the mortality in the Region from Meconium Aspiration was about 50%. This is an alarming factor which needs attention and should be impacted by appropriate management of these infants in the delivery room and immediate postnatal period. We tried to help them determine a way that they could suction meconium effectively and they will need to make some minor adjustments in their tubing in order to accomplish this.

We were asked to consult on an infant who had been “turning blue” off and on since birth and we were able to help them determine an appropriate treatment plan. Again they have a lot of equipment in the nursery area, ventilators, monitors, pulse oximeters but we identified a problem which contributes to the morbidities of these children. This issue related to the use of oxygen has been apparent in all areas we visited. Too much oxygen can damage the retina of the eyes, if delivered in an uncontrolled and unmonitored manner. We questioned the use of the pulse oximeter and the alarm limits which were set. No one in the unit was able to show us how to set alarms nor understood the need to keep the saturations below 95%. In Ulan Ude, Oblast Children’s hospital where many of the infants are transferred they have noted 6 cases blindness in the last year. This is a significant morbidity which was common in the 1940’s in the West until we determined how to effectively use pulse oximeters.

Statistics in this Region are still questionable, in particular related to the low birth weight infant. In the district hospital (534 births) they reported one infant < 1000 grams who was born. But in discussing the outcome of the infant the story ranged from the infant died, to the infant being transferred at 7 days to the infant staying and being transferred at 1 month of life. But there was not official record of the outcome of this infant and this staff all had their own opinion of what had happened to her.

Outcomes:

Buryatian Perinatal Center

	1995	1996	1997	1998	1999	2000	2001
Early Neonatal Mortality	6.1	1.96	1.9	1.9	2.43	3.4	2.3
Perinatal Mortality	13.5	10.3	8.1	6.3	10.2	6.8	7.5

Most infants reportedly die of congenital anomalies although many infants also die from Respiratory Distress Syndrome. No reported deaths from meconium aspiration syndrome.

Ulan Ude City Maternity Hospital

	1995	1996	1997	1998	1999	2000	2001
Early Neonatal Mortality		5.6	11.1	6.2	4.1	6.6	3.2
Perinatal Mortality		12.8	18.3	16.8	10.8	15.2	9.3

Most infants reportably die from congenital anomalies, respiratory distress syndrome and hypoxia (asphyxia)

There is a plan for outreach in the Republic in 2002 for NRP which is supported by the MOH and local health department but may be difficult for them to carry out due to the distance they must travel.

Chelabinsk

Sites included in the evaluation in Chelabinsk were Chelabinsk Maternity Hospital connected with the Clinics of the Medical Institute, City Maternity Hospital # 6, and the Oblast Children’s Hospital which houses the NRP Training Center and the Neonatal Center for the Region. Dr. Romaneko is a Rector of the Medical Institute as well as the Director of the NRP Training Center. He clearly has a good vision on not only how to move forward with NRP activities but also on opportunities for improvement in what

they have been doing. Additionally he has a wonderful working relationship with the head of the City Health Administration which totally supports the training center activities. They have supporting the printing and distribution of the NRP materials for many years as well as passed a precause outlining training activities for all caregivers in the City.

NRP Training Center and Activities:

The instructors in Chelabinsk were trained by their Taucoma Partners. We had met with them prior to their visit to Chelabinsk at the request of AIHA and updated them on the training model we had used for NRP and it appears the same model was used in Chelabinsk. They have a unique set up in the NRP Training Center there and the 3 instructors are academicians yet are also present in the clinical setting. They initially translated the old NRP book into Russian without assistance and now are using the new guidelines. They have developed the course to be 10 days long but it is due to the need to prepare clinicians for a course of this type. The first day is basic theory, overview of the course, the need to change the resuscitation practice, the video (old version) and students are given the book from which they will study for the 2 weeks. Dr. Romanenko described the first day as sort of “a motivational lecture”. The next day they are given a “day off” to formally prepare for the first lesson. Each day one lesson is taught and practice is allowed as needed. This is done since they could not give the manuals in advance (they did not have enough) but recognized the need for preparation.

The training Center has a very small room with 4 computers which have either been donated or were purchased by AIHA through the partnership. They have also acquired an LCD Projector and lap top and overhead projector so are well equipped with audiovisual equipment. They have installed previous NRP exams on the computers and use a pretest as well a posttest for participants. This is a fairly new way of testing but it has helped maintain the security of the exams and also introduces the computer to many people who previously have never worked with one.

They have trained anesthesiologists (intensivists), ambulance attendants, neonatologists, and in 2001 began training obstetricians, as well as internists and residents in neonatology.

For 2002, they have an agreement with the Medical Academy and they hope by the end of next year to involve the medical faculty in the training of NRP. This will be approximately 200 people including Obstetricians. This they feel will add multistage training to their program so when they get to training MDs in the Maternity Hospitals they will have already been exposed to the course content and the training may be smoother and more effective.

In Chelabinsk there is support by the City Health Administration and in fact they are extremely proud of the Center and their ability to offer such training. There has been a Precause in place that testing and course completion is mandatory for physicians caring for infants.

NRP for the Oblast – A precause was issued by the Chief Oblast Administrator about establishing Oblast Centers for NRP training. This has been adopted and plans are underway within the Oblast to establish 5 such centers. We were impressed by Dr. Romanenko's vision of how to outreach this program effectively and his ties to the health administration in the City and Region. This is clearly needed to ensure the program spreads. These Oblast centers will function as mini – centers and the NRP Training Center has alloted a small portion of this years resupply budget to assist in this project. Local health administrations have contributed the remaining funds needed.

The NRP TC instructors will train instructors in each of 5 cities. They will use the new guidelines to do this and plan to begin in September / October 2002. The instructors in each city will include the Chief Nurse of the Department so they may officially begin to add nurses to the student profile. Since they now have a better supply of manuals, a manual will be given to each maternity hospital in the Oblast. Each of the 5 cities was given a copy of the manual on disc so they can print as many for their city as they feel necessary. Once there is a good supplies of manuals the instructors in Chelabinsk feel they can reduce the course to 6 days, eliminating the preparation days. But stressed that the course preparation in some format is absolutely necessary.

The Chelabinsk instructors are travelling to Saratov to train instructors for the new NRP Training Center there. They will use the Train the Trainer course which was developed and all instructors received over the years but felt they would add an additional day for these new instructors just to practice skills and go over equipment. In the early days of training most of the instructors were part of AIHA partnerships and had a lot of exposure to this equipment.

The training in Chelabinsk began in 1995-1996. The instructors have identified and some what quantified the need for retraining (recertification) as has been discussed by the Steering Committee and most instructors for many years. Recently they retested 65 physicians and only 4 successfully completed the written and skills exams. This certainly points to a much needed process for recertification.

Lessons they have learned in training in NRP and plans to change their methods: (as identified by the instructors of the center)

Initially, they took one or two persons from each maternity to their center and trained them. They have realized that a small number of people will not be able to impact the care to newborns alone and in fact will also have difficulty implementing the principles. Without additional instructor training one cannot expect this person to train others. They plan to train an instructor for each maternity hospital who will have the responsibility to train others in their institution. But in order to maintain course standards and intergrity and to assess how effective instructors are participants will still come to the NRP Training Center for testing only.

The instructors now are giving the books to many people in a maternity hospital ahead of time, going out to the maternity hospital to do the training, working with the staff ahead of time on the mannequins, then in the delivery room. They are also now focusing on the

team concept in the delivery room which they had not done in the past. In the Maternity hospitals themselves, they are helping them identify the team and actually assisting them in establishing teams as needed. They are also helping them with preparation of their own equipment and identifying needs for administration.

Once the staff have been prepared in their own environment they will come yearly to the NRP Training Center to test both written and skills. This will control the test environment as well have help the staff more easily apply the concepts and skills in their own delivery setting.

The instructors will do evaluation and testing both of individuals as well as in pairs. They feel this will help to reinforce the team concept which is needed for NRP. They have also decided to include testing on setting up of delivery room equipment to help with preparation needed in the actual environment for resuscitation and identify equipment needs for administrators.

Those who do not successfully complete the didactic or skills part of the evaluations will need to go through a 2-3 day remediation.

Clinical Application:

The city hospitals we visited were well equipped although the trend of equipment not available continued; no manometers, poor connection for suctioning of infants with meconium in the amniotic fluid, no premature infant masks including in the Maternity Hospital which delivers preterm infants. The delivery room equipment was much better set up however, and staff seemed well prepared for the most part.

WE were able to observe the delivery of an infant in one of the maternity hospitals by cesarean section. The infant was essentially in pretty good condition but some of the basic of stabilization seemed confusing to the staff. The infant was slow to pink in color, but it took a long time for them to administer oxygen. Also they were very quick to suction the stomach contents and we suggested a correction in the management so the infant had time to recover and stabilize.

Outcomes:

All maternity hospitals have ventilators and the Neonatal Center has seen an increasing trend of infants being admitted with low carbon dioxide levels in their blood. This is essentially due to the fact the infants have been over ventilated but the neonatologists have no means by which to measure blood gases. This is a morbidity issue which needs to be addressed. The units are being given ventilators to care for sick infants but without monitoring they are actually endangering the infants long term outcomes. Low carbon dioxide levels in the blood is associated with long term developmental delay.

There was also significant concern and lack of understanding about the use of oxygen and the need to monitor and control its use.

The staff in the Regional Hospital decided this year to analyze the results of infants who were transferred. What they concluded was the outcome of sick infants was actually optimal when they were transferred to the NICU within the first 24 hours of life. (18% of infants die) The longer an infant stayed in a maternity hospital the greater the chance

of mortality. If transferred > 6 days, 31% die. Based on their analysis optimal time of transfer is 6-12 hours after birth. The plan is to prepare

Lessons to share:

Pulse oximeters

Ventilators

No manometers.

This NRP course is better implemented in Regions where both medical institute staff and clinicians are trained as instructors. This seems to be an important component of the implementation in the NIS since academicians are responsible for education. The NRP Course should whenever possible be attached and accepted as part of postgraduate medical and nursing education.

The role of the Regional health department and its administrators is key to the successful implementation of the program. In Regions where there is active participation and support, there is successful, widespread implementation.

Although in Russia there are disposable supplies readily available there is a need for ambu bags and masks. These items are extremely well used and need replacement in most if not all situations.

There is a major barrier to Outreach Education for all centers. That is no one has upfront money to pay for tickets to travel and the reimbursement from the AIHA Regional offices is dependent on when the Regional staff get to the cities for an event or the vice versa. This becomes more difficult the farther the center is away from the Regional office. We have heard this issue not only in Russia but in Ukraine. Instructors have had to try to use their own money for travel up front and although many of them find a way this is not without great personal sacrifice.

It is important for NRP Training Center Staff to visit maternity hospitals to assist in the assessment of Delivery room set up and make suggestions for needed equipment as well as assist in establishing the team concept for neonatal resuscitation.

Issues:

NRP and stabilization

Transport

NICU care