Pediatrics: The First Year of Life in Cuba

- Well Babies: Cuba's National Program
- Cuban Maternity Leave Extended to Fathers
- Infant Mortality and Congenital Malformations
Editorial
1 Safeguarding the First Year of Life

Spotlight
2 Well Babies: Cuba’s National Program
   By Michele Frank, MD

MR Features
6 Cuba’s Maternity Leave Extended to Fathers, But Few Dads Take It
   By Debra Evenson

MR Interview
8 Fernando Domínguez, MD PhD, FAAP
   Neonatologist
   Vice President of the Cuban Society of Pediatrics
   By Michele Frank, MD

International Cooperation Report
10 A Conversation with Internationalist Aleida Guevara, MD
   By Gail A. Reed

Cuban Medical Literature
12 Prenatal Hydronephrosis: A Proposal for Postnatal Study & Follow-Up
   By Sandalio Durán, MD

17 The Skin-to-Skin Method (Kangaroo Care):
   Age Adjusted Evaluation of Neuro-behavior at One Year
   Dr. Ramón Acosta Díaz, et al

21 Infant Mortality Due to Congenital Malformations
   Riellys Caridad Ramos Soto, et al

24 Relationship between weight at birth and the number and size
   of renal glomeruli in humans: A histomorphometric study
   Reinaldo Mañalich, et al

27 Abstracts

Top Story
29 Cuban Nephrologists Present Isle of Youth Study at Nephrology 2005
   By Gail A. Reed

Headlines in Cuban Health
31 Accompanied Labor:
   A New Step in Cuba’s Maternal-Child Health Program
   By MEDICC Review Staff

32 Rock Star Treatment for Kids with Cancer
   By Conner Gorry

32 Cuba Close to Eradicating TB
   By MEDICC Review Staff

33 Cuba and Venezuela Step Up Health Cooperation:
   Sight-Saving Initiative for Region’s Poor
   By Gail A. Reed

34 Cuban Vaccine Wins Gold Medal from WIPO
   By MEDICC Review Staff

34 Fat Attack! Cuba Confronts Obesity
   By Conner Gorry

35 Improbably, Drought Worsens in Cuba
   By Conner Gorry

35 Cuba and Guatemala: Innovations in Physician Training
   By Gail A. Reed
Safeguarding the First Year of Life

Ten expectant mothers and 200 children under the age of five died in the ten minutes it took you to brew your coffee this morning. Another 10 and an additional 200 died as you drank your first cup and so on throughout the day so that 10.6 million children and 529,000 pregnant or new mothers will have died by the end of each year. The overwhelming majority of these children (7 million), die within four weeks of birth, mostly in the developing world. As if these statistics weren’t sobering enough, consider that most of these deaths are preventable.

According to the World Health Organization’s 2005 World Health Report: Make Every Mother and Child Count, six causes are responsible for nearly 90% of infant deaths: acute neonatal conditions (premature birth, birth asphyxia and infections); lower respiratory infections, mostly pneumonia (19%); diarrhea (18%); malaria (8%); measles (4%); and HIV/AIDS (3%). The reason so many newborns die at such an alarming rate can be summed up in one word: poverty.

In all its guises, poverty takes millions of neonatal and postneonatal lives annually. Unavailability of clean water, absence of medical assistance during pregnancy and birth, and malnourishment among expectant mothers are among the leading causes – all preventable – of mother and infant deaths. For example, UNICEF’s report Childhood Under Threat: State of the World’s Children 2005, found that around 400 million children (one in five), in developing countries have no access to clean water and another 500 million (one in three) have no access to sanitation facilities, causing 1.4 million deaths each year.

“It’s a scandal,” said Marie-Paule Kieny, head of the WHO’s family and community health division, adding that “newborns must be quickly washed, kept warm and preferably breastfed within an hour after birth.” Such simple steps could “substantially” lower infant mortality rates, she said, and are included in the UN’s Millennium Development Goals, which aim to lower maternal mortality by 75% and infant mortality by 67% by 2015. To achieve this, the 75 most affected countries will have to invest US$9 million annually over the next ten years in their public health systems.

Chronic illnesses associated with pregnancy (e.g., anemia), women giving birth at very young ages, and women having many children in succession have also been identified as causes contributing to infant mortality. Indeed, Charles MacCormack, president and CEO of Save the Children, provides a clue to improving global infant mortality rates when he says, “the quality of children’s lives is inextricably linked to the health and education of their mothers.”

Still, how to curb this global crisis is no mystery; pick an international organization (e.g., UN, WHO, PAHO, etc) and you’ll find reports and analyses on this public health issue that is poised to cripple countries facing growing populations coupled with scarce resources. “The challenge is to find a better way of establishing continuity between care during pregnancy, at birth and when the mother is at home with her baby,” according to the WHO’s recent report, which calls this ideal ‘continuum of care.’ In Cuba, this care is provided within the Maternal-Child Health Program, the scope of which extends to young women beginning in their reproductive years, and follows children from infancy into their teens. Key to the program is the emphasis on the First Year of Life, our focus of this month’s issue (see Spotlight: Well Babies: Cuba’s National Program; MR Interview: Fernando Dominguez Dieppa, Vice President, Cuban Society of Pediatrics).

Cuba has reached record lows in infant mortality for the country and the region - 5.8 per 1,000 live births in 2004 – precisely because there is an explicit ‘continuum of care’ for prospective mothers and their babies. The program begins with family planning and comprehensive care for pregnant women which includes an average of 12 physician consultations during pregnancy, (more for at-risk mothers or if specialized testing indicates malformations, see Infant Mortality Due to Congenital Malformations). Ensuring safe deliveries is also key, and 99.9% of all births are attended by skilled medical personnel.

Sobering Statistics

- Number of children with no access to health services: 270 million (one in seven).
- Number of African children who do not reach their fifth birthday: 1 in 5.
- Number of children under five who die daily worldwide: 29,158.
- Number of infants who could be saved annually through proper immunization: 2.2 million.
- Percentage of infants receiving DPT3 immunizations: 78% worldwide; 60% in Sub-Saharan Africa.
- Percentage of deliveries attended by skilled health professionals (nurse, doctor or midwife): 32% in least developed countries, 59% in developing countries, 99% in industrialized countries.
- Number of women who are at risk of dying during pregnancy or childbirth: 1 in 17 (least developed countries), 1 in 61 (developing countries), 1 in 4000 (industrialized countries).
- Percentage of children under 5 who are severely underweight: 8% worldwide.

The well-baby program is based on regular visits to the family doctor and pediatrician during the first year of life, and a schedule of 13 vaccinations are administered to all children, which has resulted in a 98% rate of vaccination for Cuban children under the age of two. Access to these and other health care services in Cuba are free and universal, obviating equity issues and providing a space for health education through family doctor offices and community clinics. Health system policies have progressed over the last years to encourage greater participation by both parents in caring for and raising their children, from the moment the couple is expecting (Accompanied Labor: A New Step in Cuba’s Maternal-Infant Program). Of course, even they have to contend with traditional roles (Cuba’s Maternity Leave Extended to Fathers, But Few Dads Take It).

Yet, when it comes to a healthy first year of life, the WHO, UNICEF and all major research indicate that health services are a fraction of the solution: literacy rates among prospective mothers (96.7% in Cuba),[8] and access to safe water sources are among the key indicators that provide environmental supports for this delicate stage of life.

One ongoing effort that aims to improve Cuba’s ‘continuum of care’ is the Isle of Youth Study-ISYS (Cuban Nephrologists Present Isle of Youth Study at Nephrology 2005) that maps and follows risk markers of chronic kidney disease in an entire population – including 1200 babies from one day to one year old – in order to design prevention strategies for CKD and related conditions. The data gathered over time is expected to inform prevention strategies germane to both developing and developed nations in the fight against this chronic disease epidemic worldwide.

On the news front, this issue of MEDICC Review carries several stories generated by South-South cooperation (Cuba and Guatemala: Innovations in Physician Training; Cuba and Venezuela Step Up Health Cooperation: Sight-Saving Initiative for Region’s Poor). Last, we’re pleased to share A Conversation with Internationalist Aleida Guevara, MD, who speaks as the daughter of a legendary man, but more so in her own voice as a pediatrician who has served in Central America and Africa, where she made her personal commitment to health as a fundamental human right.

Certainly, and unequivocally, newborns everywhere are entitled to it.

The Editors

REFERENCES
1. Of the 530,000 women who die each year during pregnancy, 68,000 die due to unsafe abortions.
3. ibid.
5. op.cit.
8. Rate for 2001, according to the Human Development Report, 2003, UNDP ▼

SPOTLIGHT

Well Babies: Cuba’s National Program

By Michele Frank, MD

Cubans in Cuba and the diaspora are in love with children. You just need to see a streetwise teenager strutting his stuff, only to melt at the sight of a toddler. In Cuba itself, this cultural context of strong and extended family bonds is bolstered by programs prioritizing infants, young people and women in their reproductive years, and a community commitment to children that is reinforced by policy and effective popular advocacy.

The monitoring and improvement of conditions for healthy families and children is indeed a job for society at large. Educational levels of mothers and fathers, environmental concerns beginning in the home, safety for children at home and in their communities, schooling and opportunities—all these factors and more play their part in de-
terminating the quality of childhood and the passage to maturity.

In Cuba’s case, for nearly five decades, considerable expertise and available resources have been devoted to shaping a national network for the promotion of maternal-child health, with special emphasis on the first year of life when children are most vulnerable. One key element has been integration of efforts and cooperation among health, education and justice ministries; local government; service agencies and community-based organizations such as the Federation of Cuban Women, Neighborhood Transformation Workshops and others.

Nevertheless, the Ministry of Public Health’s share of this responsibility is a hefty one, summarized in its National Program for Maternal-Child Health (PAMI), which is considered one of the most important within the Cuban health system. PAMI has a key role and influence as an oversight body at the national, provincial and municipal levels. And it is fair to say that beyond the political will this framework represents, infants, children and family well-being are a driving force behind the personal commitment of Cuban health professionals. The family doctor-and-nurse teams—located literally in every Cuban neighborhood and rural settlement—are the first link in a chain that involves ob-gyn’s, neonatologists, pediatricians and other specialists.

The results taken together affirm that protection of women’s and children’s health is possible, even in relatively resource-scarce settings of developing countries—an encouraging message as the world struggles to cope with the crisis of childhood confronting humankind today.

The International Picture of Child Health: An Urgent Call

The World Health Organization’s (WHO) World Health Report 2005 – Make Every Mother and Child Count, is a compelling call detailing the current situation: “...this year almost 11 million children under five years of age will die from causes that are largely preventable. Among them are 4 million babies who will not survive the first month of life...” The report continues, stating that “reducing this toll in line with the Millennium Development Goals depends largely on every mother and every child having the right to access to health care from pregnancy through childbirth, the neonatal period and childhood.” (http://www.who.int/whr/2005/en/index.html)

The Millennium Development Goals report reveals what can only be described as the shameful inequity of children’s chances around the globe: “More than 10 million children die each year in the developing world, the vast majority from causes preventable through a combination of good care, nutrition, and medical treatment... In developing countries one child in 10 dies before its fifth birthday, compared with 1 in 143 in high-income countries...”. (http://www.developmentgoals.org/Child_Mortality.htm)

Recently, a special series in The Lancet added the important medical journal’s voice to the clamor for solutions to the crisis: “Eight million children are still born or die each year within the first month of life. This figure never makes news. The issue of child survival is a moral as well as a health barometer of our times.”

The Lancet

Women and Children in Cuba: Selected Indicators

Infant mortality, 2004: 5.8 per 1,000 live births (Ministry of Public Health, Havana)

% of surviving children at 5 years of age, 2004: 99.2% (Ministry of Public Health, Havana)


% children under height for age, 2002: 5% (Human Development Report, 2004, UNDP)

Maternal mortality (direct and indirect), 2003: 39.5 X 100 000 live births (Ministry of Public Health, Havana)

Net primary school enrollment ratio, 2002: 96% (Ministry of Public Health, Havana)

Percent of in-hospital live births, 2003: 99.9% (Ministry of Public Health, Havana)

Adult female literacy rate, 2001: 96.7% (women over 15 years of age). (Human Development Report, 2003, UNDP)

Low birth weight, 2003: 5.5% (Ministry of Public Health, Havana)

% of children under two years of age with all vaccination doses complete, 2004: 98% (Ministry of Public Health, Havana. Note: Cuba vaccinates all children against 13 diseases).
workers, and journal editors. Together we can make a difference to the lives of those who have no voice. We believe that this is the most important public health campaign we have taken part in for a generation.”
(http://www.activemag.co.uk/lancet.htm)

Cuba’s Contribution

In Cuba, there has been a relatively rapid transformation in child health indicators – from a ranking typical of a developing country to one on par with the industrialized countries. (For comparative data, see MEDICC Review, Vol. VII, No. 1, 2005, Cuba Hits Record Low Infant Mortality.) Losing babies is still very much a part of Cubans’ collective memory; yet their health profile today is astonishingly positive. So how do they do it?

“We take this idea of the rights of children very seriously,” says Dr. Gutierrez – it is very important. It not only is protective of children but it also is educational, it teaches them about what they should stand for, it empowers them. This creates hope – we need more hope for our young people in this world. They are inheriting quite a mess; we should support them in every way we can.”

The First Year of Life

Like adolescent health, one of Dr. Gutierrez’s specialties, pre-natal care is also constantly evolving. As a result of the implementation of the family doctor-and-nurse program in the late 1980s, the pyramid of care rests on this duo in each neighborhood. The essential principle of the team is that they are their community’s “guardians of health” and, as such, concentrate many of their efforts on prevention.

In the case of mothers-to-be, family doctors are expected to carry out a thorough intake exam by no later than the 9th week of pregnancy. A healthy, problem-free pregnancy involves at least 12 pre-natal visits and a battery of regular lab tests and screenings. Ultrasound is part of standard pre-natal care, available now at local polyclinics. Paid time off from work for pre-natal visits is the law, as is an extensive maternity leave.

High risk pregnancies get special and individualized attention, and family doctors rely on a wide range of services and facilities as back-up for their recommendations to patients for ensuring a healthy pregnancy and birth. This can include special tests, community-based maternity homes with both day programs and overnight facilities, supplementary nutrition programs, and inter-consultation with other specialists (pediatric cardiologists, obstetricians, pediatricians, etc.).

Education of mothers and fathers is receiving more attention in recent years. For example, in informal sessions, physicians regularly inform pregnant women of the benefits of exclusive breast-feeding for at least the first 4 months of life; and they involve both parents as much as possible from the start, including preparing the couple for any anticipated health problems the newborn might present. Encouraging participation by both mother and father extends to the legal option for paternity leave (see Cuba’s Maternity Leave Extended to Fathers, this issue), and for authorized absence from work by either parent in the case of a sick or hospitalized child.

In-hospital births surpass 99%, and the majority of Cuba’s maternity hospitals have been awarded the UNICEF distinction of “Mother and Baby Friendly Hospital”, based on a series of parameters including the percentage of women who leave the hospital exclusively breast-feeding their newborns.

UNICEF has continually praised Cuba’s work in this field, and its dedication in general to children’s health—choosing to pilot several programs on the island. “It’s quite easy to work on health projects in Cuba with the Ministry of Public Health,” says Dr. Odalys Rodriguez of UNICEF-Cuba. “We get full cooperation and the appreciation is palpable.”

Family doctors frequently visit their patients—mothers and newborns—in the hospital, and they do the first full intake exam within 72 hours of the baby’s arrival home. This first well-baby appointment is a house call; and from then on, mothers will take their infants to the family physician for regular check-ups, and to pediatricians who rotate through family doctor offices for team consultations.
Beginning in their first year, Cuban children are immunized against 13 childhood diseases (see *MEDICC Review* Vol. VI No. 1, 2004, Cuba’s National Immunization Program). In 2004, the program received the Pan American Health Organization’s highest rating, as a result of an extensive evaluation visit by the PAHO/WHO Immunization Unit. “The quality and organizational consistency and systematic application of the Cuban immunization program is impressive and significant,” reported Dr. Jon Him Andrus, head of the Unit and the evaluation team. He strongly encouraged Cuban health authorities to do more to share the experience with other countries.

The comprehensive care offered to mothers and newborns under the Maternal-Child Health Program—relying on accessible and free services across the country—has made a strong impact on health equity for children in the country, reflected in the following chart comparing infant mortality rates in all Cuban provinces and territories.

### Infant Mortality By Province*

<table>
<thead>
<tr>
<th>PROVINCE</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinar del Río</td>
<td>4.7</td>
</tr>
<tr>
<td>La Habana</td>
<td>7.3</td>
</tr>
<tr>
<td>Ciudad Habana</td>
<td>6.6</td>
</tr>
<tr>
<td>Matanzas</td>
<td>4.4</td>
</tr>
<tr>
<td>Villa Clara</td>
<td>4.6</td>
</tr>
<tr>
<td>Cienfuegos</td>
<td>5.2</td>
</tr>
<tr>
<td>Sancti Spiritus</td>
<td>3.3</td>
</tr>
<tr>
<td>Ciego de Ávila</td>
<td>5.7</td>
</tr>
<tr>
<td>Camagüey</td>
<td>5.8</td>
</tr>
<tr>
<td>Las Tunas</td>
<td>3.8</td>
</tr>
<tr>
<td>Holguín</td>
<td>5.9</td>
</tr>
<tr>
<td>Granma</td>
<td>5.0</td>
</tr>
<tr>
<td>Santiago de Cuba</td>
<td>7.2</td>
</tr>
<tr>
<td>Guantánamo</td>
<td>8.5</td>
</tr>
<tr>
<td><strong>Isle of Youth</strong></td>
<td>1.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5.8</td>
</tr>
</tbody>
</table>

(Source: Ministry of Public Health, Havana)

Still, Dr. Gutierrez concedes there is much work to be done to improve things. This is one of the main goals of PAMI – to identify problems, areas that need improvement, and then address them. “We still have teen pregnancy, it’s going down, but it is still an issue – perhaps not as big a problem as in other countries. But for us it is a problem until it is resolved.

“There are many ways that young people can access information on family planning, HIV-AIDS, drugs, and other health issues, but we can, should and will do more.”

New and specialized screenings, such as early detection of hearing loss in infants developed by the Cuban Neuroscience Center, has made it possible to implement early intervention in the hearing impaired starting as early as 3 months of age. Likewise, the national children’s heart network is designed to provide specialized coverage all Cuban babies in need of this level of attention (see *MEDICC Review*, Vol. VII, No. 1, 2005 *Treating Children with Congenital Heart Problems: It Takes a Network*).

Much of the attention in the PAMI program now focuses on tackling the leading causes of infant death in Cuba, which at this point are quite similar to those in developed countries.

### Leading Causes of Infant Death, Cuba 2004

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>Number of deaths</th>
<th>Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain perinatal conditions (P00-P06)</td>
<td>328</td>
<td>2.6</td>
</tr>
<tr>
<td>Congenital malformations, deformations and chromosomal abnormalities (Q00-Q06)</td>
<td>212</td>
<td>1.7</td>
</tr>
<tr>
<td>Influenza and pneumonia (J10-J18)</td>
<td>38</td>
<td>0.3</td>
</tr>
<tr>
<td>Sepsis (A40-A41)**</td>
<td>18</td>
<td>0.1</td>
</tr>
<tr>
<td>Heart disease (I05-I52)</td>
<td>15</td>
<td>0.1</td>
</tr>
</tbody>
</table>

*Per 1,000 live births
** Excluded infants < 28 days

Attention to Cuban babies in their first year of life, as Dr. Gutierrez says, is indeed a “work in progress”. As the research institutes develop and produce new vaccines, Cuban children benefit. (See Camaraza, M et al, *Induced immunogenicity by means of the VA-MENGOC-BC® anti-meningococcal vaccine against the ATCC C11 N. Meningitides strain in adolescents 12 years after vaccination*. Rev Cub Med Trop 2004 56(1):26-30).
Cuba’s Maternity Leave Extended to Fathers, But Few Dads Take It

By Debra Evenson

Since the early 1970s, Cuban family law has required men to share equally with their wives and partners in household chores and the care and nurturing of children, regardless of whether each contributed equally to the family’s financial support. Yet, machismo inherited from patriarchal traditions posed a formidable barrier to achieving such equality. Indeed, many Cuban laws and regulations reflected and maintained the stereotypical role of women as the sole nurturer and caretaker. For example, until the 1980s, only women could accompany children and family members overnight in hospitals.

As early as 1963, Cuba adopted a maternity leave law that granted women 12 weeks fully-paid maternity leave. The law has been modified several times since, expanding the duration of paid maternity leave so that today, Cuba’s maternity and parental leave legislation is among the most progressive in the hemisphere: pregnant women are entitled to 18 weeks fully-paid leave (six weeks before birth and 12 after), plus an additional 40 weeks at 60% pay, assured of returning to their same job.

Women had campaigned for the extension of paid leave from the 12th week after birth to the end of the first year because they wanted to spend more time with their newborns and because children were no longer admitted to the national subsidized daycare system until they had reached one year of age.[1] They were supported by physicians who defended the importance of extended breastfeeding. Prior to the adoption of the modified law in 2001, women without family members or friends willing or able to care for their babies or the financial resources to hire someone to do so until they reached a year old (45 days old prior to 1990), had to drop out of work without pay in order to care for the infant themselves.

However, until very recently, no similar benefits were extended to fathers, thus reinforcing the notion that only women should nurture newborns. In 2003, the government took another step towards breaking down the traditional division of family duties by giving either the father or the mother the option of taking paid leave at 60% of salary to care for their infants from 12 weeks up to one year of age. The parents may opt for the father to take the leave whether or not the couple is married.

Although the legislation is expressly geared to promote the “shared responsibility of the mother and father” in the care and rearing of their children, the law does not grant paid leave for the father to attend the birth or to assist the mother in the days or weeks immediately following birth. Guillermo Ferriol, one of the labor lawyers involved in the drafting of the legislation commented that the issue of leave for the father at the time of birth did not come up during discussions leading to the new law and thus was not taken under consideration.

So Far, Few Have Chosen Paternity Leave

Men do, however, increasingly attend the birth of their children and may even take a few days off following the birth to help the mother, but to do so they must use some of their 30 days annual vacation time (see Accompanied Labor: A New Step in Cuba’s Maternal-Child Health Program, this issue). Since it is common for new mothers to be helped by extended family members or friends in the weeks immediately after birth, legislators may not have taken into account situations where this is not the case or the other benefits of having the father present during the first few days.

“As early as 1963, Cuba adopted a maternity leave law that granted women 12 weeks fully-paid maternity leave. The law has been modified several times since...so that today, Cuba’s maternity and parental leave legislation is among the most progressive in the hemisphere.”
The reasons that so few fathers have taken the option are varied. According to sources quoted in Trabajadores, the reasons are basically twofold: 1) many men and women are not yet aware that this option exists or do not fully understand its application; and 2) women are, and continue to be, the primary caretakers, despite efforts to encourage participation of men. One male worker provided this explanation as to why men are not readily caring for their newborns: “It’s hard for us to feed them, change diapers and, above all, hold and [bottle feed] them when they cry and we can’t figure out why. So you don’t know what to do in that situation.”

In addition, women generally prefer to stay with their infants during the first year. Also, breast feeding is encouraged by health care workers, and although new mothers are entitled to an hour off from work daily for nursing, many women may consider this insufficient, especially since manual or electric breast pumps are not widely available. Alejandra González, a lawyer whose daughter was born in 2002, told MEDICC Review that she took advantage of the extended leave because she wanted to nurse her child and be with her during her infancy. Although her husband helps a great deal, González says, “If I have another child, I’d take the leave again rather than my husband, even though it is difficult to set aside my professional work for a full year.”

Why Some Fathers Do Take Paternity Leave

According to one report, the reason some fathers have chosen to stay home with the newborn has to do with a combination of economic factors and a disposition to become the primary caretaker. In some cases, the woman’s salary is superior to that of the father, leading the couple to decide that the father should stay home with the child.

A few fathers recount having taken care of their newborn child even before the new law was adopted. As reported in Traba-

Table 1: Maternity and Parental Leave Policies in Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Duration of Maternity Leave</th>
<th>% of Salary Received</th>
<th>Comments: Parental Leave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>3 months</td>
<td>100%</td>
<td>Additional parental leave for 37 weeks for either mother or father</td>
</tr>
<tr>
<td>Canada</td>
<td>15 weeks: 6 prior to birth: 12 after birth</td>
<td>55%</td>
<td>Additional parental leave for 37 weeks for either mother or father</td>
</tr>
<tr>
<td>Chile</td>
<td>15 weeks: 6 prior to birth: 12 after birth</td>
<td>100%</td>
<td>Additional parental leave for 37 weeks for either mother or father</td>
</tr>
<tr>
<td>Cuba</td>
<td>12 weeks: 6 prior to birth: 6 after birth</td>
<td>100%</td>
<td>Maternity leave may be extended an additional 60 days at 50% pay if women cannot work due to pregnancy or confinement</td>
</tr>
<tr>
<td>Mexico</td>
<td>3 months</td>
<td>100%</td>
<td>Additional parental leave for 37 weeks for either mother or father</td>
</tr>
<tr>
<td>United States</td>
<td>12 weeks</td>
<td>0</td>
<td>Additional parental leave for 37 weeks for either mother or father</td>
</tr>
</tbody>
</table>

Sources: International Labor Organization (ILO) Country Reports

The new law provides additional work leave for the father if the mother dies during or after childbirth. Previously, although the father may have had no other choice but to leave his job to care for the child, he was not entitled to the subsidy or guarantees under the new law, in such circumstances the father is granted fully-paid leave for the first 12 weeks after birth, as well as 60% pay up to one year. Moreover, a grandparent or other close relative may exercise the right to this leave in place of the father.

Additional Benefits for Healthy Births and Babies

For obvious reasons, certain benefits that are designed to promote healthy births inure only to the mother. Thus, a number of labor laws are intended to protect women from activities that may be harmful during pregnancy. Further, from the time a woman becomes pregnant, she may take six paid days off (or 12 half-days) during her pregnancy to receive prenatal care. She is required by law to stop working at 34 weeks (32 weeks in cases of multiple births), and granted fully-paid leave until the birth, after which she receives another 12 weeks of fully-paid leave.

In addition, after the child is born, the law facilitates regular well-baby check-ups during the first year of life. Thus, if neither parent takes the subsidized leave, then either parent is entitled to take one day off a month to take the child to the pediatrician, and may take additional days off without pay if the child becomes ill.

NOTES & REFERENCES

2. The Cuban government established day care centers for working mothers in 1961. Initially free, the government began charging in 1970. Today the fee is based on ability to pay, with a maximum of 40 pesos a month or approximately 10% of salary.
MR INTERVIEW

Fernando Domínguez, MD PhD, FAAP
Neonatologist
Vice President of the Cuban Society of Pediatrics

By Michele Frank, MD

Dr. Fernando Domínguez is chief of the Neonatal Intensive Care Unit at Havana’s Ramón González Coro Maternity Hospital, Professor of Pediatrics and Neonatology at the Higher Institute of Medical Sciences, and honorary member of the American Academy of Pediatrics. In recent years, he has been a key member of the team that has developed a nationwide program for follow-up and support of high risk infants, and at the forefront of specialized care for babies born with problems for whom it is particularly important to anticipate sequelae and potential neurodevelopmental challenges, to promote early detection and apply timely and individualized interventions during the first year of life.

MR: Tell me a bit about the national program for maternal-child health.

FD: Yes, we call it “PAMI” or “Programa Nacional de Atencion Materno–Infantil.” It’s taken very seriously, and one important aspect is to guarantee adequate and appropriate care for children, particularly during their first year of life when they are most vulnerable. The Ministry has issued a detailed document serving as a guide for health professionals that outlines the program, its objectives and also requirements and policy in terms of providing for the health of Cuban children. Periodically it is revised and the oversight and monitoring responsibilities rest with the PAMI program departments—nationally at the ministerial level, and then at provincial and municipal levels of the health system.

MR: I understand that PAMI monitoring includes case-by-case analysis—especially in the case of infant deaths. Is this kind of detailed review unusual internationally?

FD: I suppose so, compared to other countries. For example, every infant death is thoroughly discussed, analyzed in detail, investigated. The reports must meet rigorous standards and involve all levels, to seek the answer to what went wrong—and to learn from the experience to prevent it in the future.

One of the things that I find most interesting about the program is that it begins before women get pregnant – in fact, before conception. In this sense, it emphasizes primary care and early risk-factor identification. So it’s a program not just involving obstetricians, pediatricians or neonatologists: the family doctor has a critical role to play. (Family doctors cover 99.2% of the Cuban population, according to Ministry of Public Health data fro 2003, Eds.)

So, for example, one goal is for women in their reproductive years to have their children at the best possible time for them, in terms of their health situation. At the primary care level, this means family physicians and community health promoters work with families and particularly with women, the mothers-to-be, to try to ensure that each one has her child (or children) in the best possible conditions. This can be very important in the case of a woman who is diabetic, for instance, or for the woman who has already had one or two low-birth weight babies – women who have risk factors, whatever they may be. It relies on health education, planning, family involvement, sometimes even community support, helping to ensure that she is at her healthiest, that everything is in balance and that all the necessary precautions are thought through.

The idea is (for the woman and her health care providers) to be well prepared from a biological, psychological and social point of view. This is the preconceptual early risk identification program. The system is mobilized to guarantee the best possible outcome individually for each woman: to prevent another low-birth weight, to help a woman with diabetes be able to have her baby – there is even a special program for women who are HIV-positive and who want to have children.
And for women without risk factors, counseling and medical attention are of course available to plan for a healthy pregnancy.

This is what I meant when I said that well-baby care begins before conception. This is important, of course, since these circumstances and good pre-natal care significantly impact the quality of the baby’s first year of life.

**MR:** How is pre-natal care implemented?

There are national guidelines for the basic components, as I mentioned. (In terms of education), child-birth classes are encouraged, for mothers and the fathers, too. We have a program called conscientious parenting, an educational program, and parents get time off from work to attend the classes. From early on in their pregnancies, women also receive health education concerning the importance of breast-feeding.

Early detection of potential problems receives special attention. So, in addition to regular visits to each woman’s family doctor where her health is monitored, she will have consultations with her obstetrician and other specialists as required, including pediatricians.

Regular monitoring of each pregnancy ensures early detection of difficulties. We carry out a number of routine screenings, such as alphafetoprotein for neural tube defects, ultra-sound, and other diagnostic tests. Thus, the program makes it possible for a mother to decide whether or not she wants to interrupt the pregnancy if there is a problem clearly incompatible with life. There are certain conditions that can be detected in the fetus, whose prognosis indicates that the fetus will perish in utero or the infant will die soon after birth. In such cases, the mother can choose to interrupt her pregnancy. Also when the mother’s life is clearly in danger, that choice is available. (In the early stages of pregnancy), an woman can choose to have an abortion (for a variety of reasons). But when the pregnancy is farther along than 10-12 weeks, having an abortion is only an option in these kinds of extreme cases.

**MR:** What about an unplanned pregnancy or an unwanted pregnancy? What is the Cuban policy in terms of abortion in these cases?

**FD:** There are two aspects to your question. In the first place, the life-threatening cases we were talking about, a serious disease or malformation incompatible with life: the interruption or abortion doesn’t take place before the 10th or 12th week because it’s really not possible to make such an early diagnosis of these problems. Usually the condition is detected between the 18th and 20th week. However, this doesn’t mean that everyone chooses to abort. There are babies born with serious, often fatal congenital malformations, neural tube defects, etc. We offer genetic counseling, but the decision is made by the mother or the couple. In these cases, an abortion is permitted after week 10 and usually up to about week 20 — only when there is certainty that the condition is incompatible with life.

Now, with regards to the other type of abortion: this is a fairly straightforward and acceptable matter prior to the 10th week of pregnancy. It’s an individual decision, a choice that we respect. However, we do not encourage it, and in fact a lot of work is being done to discourage it, to educate women and men about the risks and potential health consequences of abortion—especially the dangers of using it as a method of contraception. There is easy and free access to birth control and family planning in Cuba, so for the medical profession, the issue of abortion is considered a health problem that we are trying to address. We are working to reduce the number of abortions – not as a moral question, since that is up to each individual couple, but rather as a health issue.

**MR:** You mention family planning and education. How would you rate the public’s level of understanding of genetic issues; the level of confidence in maternal-child care in general?

**FD:** The way I see it is that Cubans in general have a sort of “genetic consciousness”. And in general, families know that children hardly ever die. They know that 99% of the babies that are born alive in Cuba reach their 5th birthday—a bit more, 99.2%. Cuban mothers know that there is a health care system in place that guarantees that their children will live to be 5 years old and they also know that most children who make it to age 5, live to be adults. There’s confidence in the health care system and in PAMI, availability of information, and access to resources.

I would say there is a high standard of neonatal care in Cuba as well. Approximately 1.5% - 2% of newborns have trouble at the moment of birth, and within 5 minutes only 0.5% are still having difficulty. This is very low, extremely low, meaning these are excellent indicators. In Cuba we apply the same criteria and procedures recommended by the American Academy of Pediatrics for neonatal reanimation (“The Neo-natal Reanimation Program”). All of our personnel are trained in this program which is a very good program used in many countries.

**MR:** So basically, the Cuban school of neonatology is the same as the U.S. school?

**FD:** We are less invasive than they are in the States. We are more able to focus on each patient as an individual and assess what would be best for each baby, what will work best given the particular family. We can give very individualized care here in a manner that is more difficult to do in countries like the United States. Because we know the mother since before conception—here again the importance of the neighborhood family doctors—we have an easier time developing personalized, individualized plans for all the babies born. Our statistics are on par with the Scandinavian countries where there is a strong bio-psychosocial focus like ours.

**MR:** What about low birth weight?

**FD:** Low birth weight of less than 1500 grams is about 5.5%. It’s been like that for some time now.
MR: Do the low birth weight statistics compare favorably with those of other countries?

FD: They’re on par with many developed countries. At the beginning of the (economic crisis), in the early 90s, there was a rise in low birth weight babies. We caught it fast, though, and we worked on it, particularly in terms of guaranteeing better nutrition for pregnant women. But within the group of low birth weight babies, those who weigh in at less than 500 grams are the ones with real problems, and these statistics haven’t improved all that much. At the beginning of the 1990’s it was 0.5% and in the early 2000s it had only gone down to 0.4%.

MR: And these babies that are born with very low birth weight are they registered as abortions?

FD: No. Only babies with malformations or anomalies that are known to be incompatible with life. When the child is born alive, he or she gets full attention. We do everything we can to save them.

Again, thanks to the maternity homes and other community projects like the lunch programs for pregnant women, the statistics are improving. The other thing we’ve done is create specialized centers at designated hospitals for very high risk women and babies, so since we usually know ahead of time that there may be a problem, we can hospitalize these women there. This makes a big difference—the babies go to the specialized centers and neonatal care units in utero instead of later in an ambulance.

MR: So more of these babies are living?

FD: Yes, and that’s where the importance and necessity for good follow-up comes in. Babies who were in critical condition at birth do not die nearly as often as before. They live, but often with neurological challenges that are important to detect and begin working on as early as possible. Neonatal mortality is way down—it’s below 4 per 1000 live births.

MR: That low?

FD: Yes between 3.5 and 4. The rest of the infant mortality is in the 28 day to one year age group. So this is the challenge now. The maternity homes have helped a lot, and the advances in community-based services and pre-natal care. But really, in order to reduce the infant mortality rate much below 6 per 1000 live births, we’ll have to reduce the neonatal mortality rate, which is due primarily to low birth weight.

This is why good follow-up and paying close attention to neurodevelopmental issues become very important. That’s why we’re putting so much emphasis on this aspect. We have trained personnel working with all the high risk cases at the community level now. The more we lower the infant mortality rate—and we’re getting down to about as low as is likely to go—the more need there will be for diligent follow-up. Because many of these babies could have sequelae, consequences as a result of the difficulties they had at birth or from the procedures and treatments necessary to keep them alive.

INTERNATIONAL COOPERATION REPORT

A Conversation with
Internationalist Aleida Guevara, MD

By Gail A. Reed

Aleida Guevara was 23 when she first traveled through Latin America – the same age as her father, Che Guevara, when he embarked on the eye-opening motorcycle adventure that would become the prologue to his legacy and basis for an award-winning film. For Aleida Guevara, who was a medical student completing her internship at the time of her own explorations, international service was also an awakening: “My first patients were Nicaraguans,” she told MEDICC Review. “And Nicaragua was where I learned to live in a world very different from my own,” and where she made her own life’s commitment.

She recounts an experience from those days in Nicaragua, where the high rate of infant mortality made even health personnel more accustomed to death than life. “I’ll never forget,” she says, “trying to intubate a baby, my head under the lid of the incubator, a laryngoscope in one hand, aspirating with the other, no more hands to use. So I asked the nurse to hand me a tube, and she replied: ‘Why are you trying so hard, little doctor, when the Lord is asking for him?’ I couldn’t imagine that; I was trying to save the baby’s life...Experiences like this one had a tremendous influence on me, made me reflect, and respect life all the more. This just couldn’t be: I had to help somehow so that people could live better, have dignity as human beings.”

It was in Nicaragua, and later serving in other Latin American countries, where Dr. Guevara began a journey into her own heritage. “We Cubans have a piece missing from our lives,” she says. “We are children of Spaniards and Africans, a bit of Asians, but our indigenous culture was snatched from us [when the Spaniards decimated the native population of Cuba, eds.]. Latin America still has this privilege: there are thousands of indigenous popu-
lations. And that makes me a little envious, you know? Because we need to redeem who we really are."

Reflects Dr. Guevara: “The indigenous people and their roots give me strength. And they have taught me important lessons. A Guayu woman in Venezuela said to me ‘I don’t want to be seen by a white doctor.’ And when I asked her why, she said, ‘Because white doctors ask you what your name is, what your address is, where you live…but what does that have to do with the pain I have?’ And you know, when a child came into my office in Cuba, I’d been asking: ‘What’s the child’s name? What polyclinic does he belong to?’ I was making a mistake. She was the person who taught me that I first have to ask: ‘What’s wrong? How is the child feeling? How can I help?’ What’s important is to begin this doctor-patient relationship with what really matters. And I have her to thank for teaching me that."

With her MD under her belt, Dr. Guevara, one of four children of Dr. Ernesto ‘Che’ Guevara and Aleida March, went on to become a pediatrician at Havana’s Higher Institute of Medical Sciences. Just before beginning her studies in pediatrics, she left home once more to serve in Angola. “How many centuries of colonization has that continent endured? How much have they been mistreated, humiliated, abused? And who can erase that? When I was in Angola, sometimes patients would bow their heads to me. So I would put my arm across their shoulder. I would take their wraps and tie the children on my back as they did, but I couldn’t break through centuries of humiliation with all the tenderness and affection in the world. I couldn’t break through everything they had suffered as a people. I needed a lot of patience and I kept trying; with a look, with a touch….And little by little, you show that you come from a different world, that you don’t come to do harm. But first you have to break through a whole host of cultural impositions that have resulted from centuries of colonial domination. You have to be very patient, and have a lot of respect for people, being willing to learn many things.”

I was reminded of a conversation recounted to me between her father ‘Che’ Guevara and members of Cuba’s first international medical team, in Algeria, 1963. The dialogue was going along fine until one Cuban physician complained that they were telling the Algerians what they needed to do, but that they weren’t doing it. Replied Guevara: “So then what makes you different from the colonialists?”

“Ah, yes!” says Aleida Guevara. “Because sometimes you go somewhere with the best of intentions and you want to try to improve life, but you don’t realize that you’re imposing a culture that is not theirs. That’s why I say respect is the key.”

“The truth is, I lived a very short time with my father,” she goes on. “I was barely four-and-a-half years old when dad left Cuba, so the most important person in my life really is my mother... She raised us with very strong values: honesty; the capacity to love; and to understand another person - even though you don’t manage to comprehend them completely - but at least to respect them. So I always say, look, the most important thing that my dad left for me was to have fallen in love with a woman like my mother...”.

Nevertheless, she says, her father influence her decision to go into medicine in at least two ways: first, he was a doctor himself. And second, the sensibility that comes from being his daughter. “Here in Cuba,” she says, “I’m a very privileged person in the sense that I receive affection from people without deserving it - that is, just because I’m the daughter of a man whom they love very much. And you get to the point where you say: How do I give back? And I think that this was the strongest influence on my determination to become a doctor. I found it was a way to return what I’d received.”

“So, I spent one year in Nicaragua, two in Angola, and that’s how I was able to repay a bit of the debt I’d accumulated. That is, I’m the daughter of an internationalist man, so the least I can do is return a bit of that, no? My brothers and sisters, too. Little by little, we’ve gone about repaying the kind of affection we’ve received.”

Aleida Guevara has also become one of thousands of Cuban physicians to serve in other developing countries, a practice begun early in the 1960s, when the country itself had few physicians. And over time, she emphasizes, sending so many professionals abroad has represented a sacrifice for them and for Cuba itself - precisely, she says, what makes South-South cooperation special. “When you give because you have extra, it’s not so significant. But when you give even though you need something yourself, that’s when human beings learn important values, and I think that this is the best thing that Cuba has done: paid attention to instilling such values.”

“And certainly Cuban history is also full of solidarity. The first internationalist in Cuba they say was an indigenous man - the chief Hatuey - who came [from the island of
Our conversation turns to the film, *The Motorcycle Diaries*, based on the book by 'Che' Guevara: “Young people certainly like the film,” she says, “and I think it’s because they see a reflection of themselves. You see, there they are, two young guys doing crazy things - crazier still in the book! If you read the book that the film is based on, the one my father wrote when he was 23, there you’ll see the craziness, how wild, but also how honest he was. Because, I might have done a lot of crazy things in my life, but it would never occur to me to write about them! This man did it, unfazed. So people see themselves reflected in the film.”

“It also brings the image of Che much closer to young people - so they realize that he’s not a myth, not an icon. He’s simply a person, like you, like me, who was capable of overcoming his own weaknesses to be more helpful, more useful to others, which is what’s important for us as human beings.

“For me, it’s very special because I read the book before it was a book, when it was still just a pamphlet. My mother gave it to me, without telling me who had written it. So I began to discover who this person was, and by the time I figured out it was my father, I swear I felt as if I was riding behind him along all those mountains, through all those places.

“In that sense, the film is something else: not only a song to the life of a man like Che Guevara, but also recognition for a continent that has been very much forgotten. To see meadows, mountains, snow, water, all the natural treasures that we have as a people, all the diversity that we have as a people, but at the same time, to realize that we ourselves, uniting our strengths, can do wonderful things like this film - it’s a song to the Americas really. Even the artists embody this, hailing from Mexico, Argentina, Chile, Peru and the Brazilian director. In the coming together of these Latin American countries, a film was created that can be understood by English-speaking men and women, from such different cultures, and has managed to awaken their sensitivities, to bring the image of Che closer, but also to pique their interest in Latin America …”.

---

**CUBAN MEDICAL LITERATURE**

**Prenatal Hydronephrosis: A Proposal for Postnatal Study & Follow-Up**

By Sandalio Durán, MD

**CONCEPT**

The collecting system is the structure that gathers urine directly from the renal tissue and sends it to the bladder through the ureter. Prenatal hydronephrosis is the dilatation of the renal collecting system detected before birth.

**Development of the Fetal Kidney & Production of Amniotic Liquid**

The kidneys are formed by three separate, but interrelated, structures: the ureteric bud, the metanephric blastema and the cloaca. By 20 weeks of pregnancy, the excretory system is already completely formed, including the ureter, renal pelvis, calyces, and papillary and collecting ducts. However, by this time, when the collecting system has finished its formation, only a third of the total number of nephrons is present; nephrogenesis continues until 36 weeks of gestation.[1]

Fetal urine contributes to the quantity and quality of the amniotic fluid depending on the gestational time. At the beginning of pregnancy, the amniotic liquid is a transudate of maternal plasma, and as the fetus grows, the amniotic liquid becomes similar to the fetal plasma, which is thought to be due to diffusion through the fetal skin. Production of fetal urine begins after the ninth week of pregnancy, and the kidneys are capable of excreting sodium and concentrating urea between 12 and 14 weeks of gestation. After 18 weeks, and especially after 20 or 22 weeks, all the amniotic liquid is constituted by fetal urine.[1,2]

For that reason, before 16 weeks of gestation, although there are no functional kidneys, the amniotic liquid can be normal because it is produced by other non-renal pathways. After 16 or 18 weeks of pregnancy and especially past 20 weeks, bilateral kidney agenesis is always associated with severe and progressive oligohydramnion.

**Fetal Ultrasonographic Exploration**

Maternal-fetal ultrasound has posed questions and challenges in the management of problems that were unknown a few years ago. However, it has also provided a new and splendid way of introducing ourselves in human renal pathophysiology.[3]

The first urinary tract structure that can be detected by ultrasound is the bladder, visualized between the ninth and tenth weeks of pregnancy, just after the start of urine production. The fetal bladder appears as a round or oval, echolucid, structure emerging from the fetal pelvis. It fills up and empties every 20 to 30 minutes, so that if is
not visible at the beginning of the study, it is generally full by the end and may easily be detected.[1] If it is not possible to detect the bladder in several studies, vesical extrophy should be suspected.[2]

The fetal kidney may be visualized after about 14 weeks of pregnancy, but it is not routinely observed until after 16 or 18 weeks. Initially the kidneys appear as two hypoechoic masses adjacent to the lumbar spine of the fetus and may be difficult to define, but as pregnancy progresses, they are easy to detect since retroperitoneal fat deposits around them and they are more clearly defined. Some of the internal structures of the kidneys, such as the fat of the renal sinuses and the medullar pyramids are not well defined until 20 weeks of gestation.[1]

Generalized use of maternal-fetal ultrasound has shown that, in addition to hydronephrosis, renal cystic diseases and even calculi and tumors[4] can be detected. But it has also been shown that pelvic dilatation or hydronephrosis is the most frequently found condition.[4-7]

Examination of the fetal urinary tract should include the volume of amniotic liquid, shape, echogenicity and position of the kidneys, presence or absence of renal cysts, good or poor delimitation between the cortex and the medulla, and the presence of cortex thinning.[1,8,9]

Most fetuses in the second quarter of pregnancy may present with a degree of pelvic dilatation. This is a normal finding at this gestational age, which may be a result of normal peristalsis of the fetal kidneys.[1] Many obstructive, as well as cystic, abnormalities can be detected and this is very important for giving counseling to the family,[1] and for the study and follow-up of the newborn.

Prenatal ultrasound has given rise to new situations in nephrology that require adequate management. Many of these children may benefit from early diagnosis and prevention of secondary complications, mainly infections.[2]

**Hydronephrosis**

As already mentioned, pelvic dilatation or hydronephrosis is the alteration of the urinary tract most frequently detected by maternal-fetal ultrasound.[2,4-7]

Hydronephrosis is not a diagnosis; it is an image finding. The diagnosis is the cause that produces it.[2]

Since pelvic dilatation is relatively frequent in the normal fetus, and the definition and diagnosis of hydronephrosis are difficult, once it is detected, adequate follow-up is required. Prenatal study has shown that mild dilatation of the higher urinary tract does not indicate an obstruction; mild hydronephrosis may be transient; and spontaneous improvement can occur.[11,12] The idea of considering every dilatation of the urinary system as a disorder for which surgery is the solution, is no longer an axiom.[13]

Prenatal pelvic dilatation that is not found after birth or disappears quickly has been explained as a process of embryonic development of the ureter. The developing ureter undergoes an obstruction and re-channeling process at the middle level; some researchers have speculated that this obstruction may occur due to an incomplete re-channeling of the cephalic and caudal ends of the developing ureter, which is later resolved. If the ureter is not permeable when urine production begins, the pelvis may suffer a transient dilatation. Fetal ureters are redundant and tortuous, but they stretch out afterwards during the longitudinal growth of the body and the ascends of the kidneys to an upper retroperitoneal position. This could be an alternative explanation for transient dilatation.[14]

Different criteria have been used to classify the degrees of prenatal hydronephrosis based on the measurement of the anteroposterior diameter of the pelvis.

In our studies we have followed the criteria of Blachar and Blachar,[11,12] while others have followed very similar criteria[16] (Table 1). Some authors[17] have used the criteria of the larger pelvic diameter measuring over 4mm before 33 weeks and 7mm after 33 weeks of gestation to suggest dilatation. Others consider that the anteroposterior diameter of the pelvis should be less that 6mm before 20 weeks of gestation; less than 8mm between 20 and 30 weeks and less than 10mm after 30 weeks.[18] The Society for Fetal Urology has proposed a classification in four groups or categories (Table 2).[9,19,20] Although different criteria have been used, it is generally accepted that a renal pelvis of 10mm or more, during the second quarter of pregnancy, is an indication of hydronephrosis.

Of the parameters used for diagnosing hydronephrosis, the most useful seem to be those used by the Society for Fetal Urology. However, degrees 1 and 2 do not represent true hydronephrosis, but a mild or moderate degree of pyeloectasia.[20,21] Real hydronephrosis always includes significant pelvic dilatation of the pelvis and calyces. Classifica-

---

**Table 1: Classifications Used for Grading Prenatal Hydronephrosis According to the Anteroposterior Diameter of the Pelvis**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Blachar y Blachar[11,12]</th>
<th>Barker et al.[16]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0 – 4mm</td>
<td>0 – 5mm</td>
</tr>
<tr>
<td>Mild dilatation</td>
<td>5 – 9mm</td>
<td>6 – 10mm</td>
</tr>
<tr>
<td>Moderate dilatation</td>
<td>10 – 14mm</td>
<td>11 – 14mm</td>
</tr>
<tr>
<td>Severe dilatation</td>
<td>15mm or more</td>
<td>15mm or more</td>
</tr>
</tbody>
</table>

**Table 2: Degrees of Ultrasonographic Hydronephrosis According to the Society for Fetal Urology[9]**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Ultrasound findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Visualization of the pelvis</td>
</tr>
<tr>
<td>2</td>
<td>Dilated pelvis and there could be a dilated calyx</td>
</tr>
<tr>
<td>3</td>
<td>Dilated pelvis and calyces</td>
</tr>
<tr>
<td>4</td>
<td>Dilated pelvis and calyces with thinning of the parenchyma</td>
</tr>
</tbody>
</table>
Congenital obstructions of the utero-pelvic union have historically been classified as intrinsic and extrinsic. The intrinsic ones are attributed to changes in the quantity and orientation of the muscular fibers of the utero-pelvic union, collagen increase, and alterations of peristalsis. Extrinsic obstructions are attributed to anomalous, ectopic or aberrant, vessels, when a branch of the renal artery that compresses the ureter irrigates the lower pole of the kidney. Fibroepithelial polyps and ureteral valves are rare causes of obstruction.[21]

Pelvic dilatations of fewer than 10mm in the third quarter of gestation are more frequently due to non-obstructive vesicourethral reflux or pyeloectasia, both conditions being more frequent in male infants.[6,7,15]

In the first three days of life, renal ultrasound should not be performed, except in very special situations, since at this stage oliguria and hypohydration may conceal pelvic dilatation.

If, during the first week of life, the renal ultrasound shows no evidence of pelvic dilatation and the kidney size is normal, the parents must be given reassuring information, but the child has to be reevaluated ultrasonographically between 3 and 6 months of age. If this second kidney ultrasound is normal, it is not necessary to continue the follow-up, if the baby remains asymptomatic. If during the second study pelvic dilatation is found, even if it is mild, micturitional ureterocystography must be performed to rule out vesicoureteral reflux. Mild dilatations (less than 10mm in diameter) are frequently due to vesicoureteral reflux,[23, 24] and it has been proven in children without postnatal dilatation detectable by ultrasound.[15,24,25] A valuable sign for suspecting vesicoureteral reflux and performing a micturitional ureterocystography is the cyclic dilatation of the pelvis during the ultrasonographic study.[26]
In all cases with dilated pelvis, micturitional ureterocystography should be performed. If the dilatation is severe or moderate, antibiotic prophylaxis should be used to try to avoid urinary infection. In the neonatal period, preferred antibiotics and chemotherapy are cephalixin (2-3 mg/kg/day). Nitrofurantoin (1-2 mg/kg/day) is used after the first month of life, and trimethoprim-sulphamethoxazole (sulphaprim at 1-2 mg/kg/day of trimethoprim) after two months of age.[27] In case vesicoureteral reflux is detected, the conduct advocated for this condition shall be followed[28] and congenital or prenatal kidney damage must be ruled out by static gammagrophy.

If vesicoureteral reflux is not found and hydronephrosis is of grade 1 or 2, renal ultrasound follow-up shall be carried out every 6 months. If hydronephrosis progresses, the conduct proposed for higher degrees will be followed. In hydronephrosis of grades 3 and 4, dynamic gammagraphic studies (MAG 3 + furosemide) should be performed. If a non-obstructive renographic pattern appears, ultrasound will be performed every 6 months, carefully measuring the pelvis, calyxes and the renal parenchyma. If the result of the gammagraphic pattern is uncertain, it will be repeated after 3 months, and if the pattern is obstructive it should be repeated after 4 or 6 weeks. In any of these two situations (obstructive or uncertain pattern), if the differential kidney function decreases, especially more than 10% (40% or less) and the pelvic diameter or the calyx dilatation in the ultrasound increase, surgery must be considered (pyeloplasty).

ANALYSIS OF MANAGEMENT PROPOSED

Micturitional ureterocystography should be performed on every newborn in which prenatal renal pelvic dilatation is detected and confirmed after birth, even if the dilatation is mild. This is due to the frequency of renal pelvic dilatations secondary to vesicoureteral reflux.[15] Also because there is no correlation between the degree of dilatation detected by ultrasound and the degree of vesicoureteral reflux.[29] This general indication is more specifically for male infants, since it has been demonstrated that vesicoureteral reflux is up to six times more frequent in males than in females.[30] It is even more necessary in male infants with bilateral dilatation due to the possibility of valve obstruction of the posterior urethra.[31]

In practice, the presence of vesicoureteral reflux determines the need for and duration of antibiotic prophylaxis[21] that we use in severe and moderate dilatations, and should be used in those cases classified as mild, if they are secondary to vesicoureteral reflux. If vesicoureteral reflux is detected, a static gammagraphic study should be carried out because of the possibility of congenital renal damage.[29,30,33]

In every child with grade 3 or 4 hydronephrosis, a dynamic gammagraphic study should also be carried out to provide information on the differential renal function and the clearance rate of the renal pelvis. For this study, two substances shall mainly be used: mercaptoacetylglucine (MAG 3) and dimethyltriaminopentacetic acid (DTPA) both labeled with 99m technetium (99m Tc-MAG 3 and 99m Tc-DTPA).

Ninety percent of MAG 3 combines with plasma proteins and is mainly excreted by tubular secretion with an alternative hepatobiliary excretion pathway. DTPA scarcely combines with plasma proteins and is excreted by glomerular filtration, so it should not be used when there is an immature kidney. Due to these characteristics MAG 3 is better for this study,[32] especially in nursing babies.

Furosemide is used for the diuretic gammagrapy, since it produces an abrupt increase in urine flow, reaching a maximum effect between 15 and 18 minutes after intravenous administration. The dose recommended for this purpose is 1 mg/kg of body weight in nursing babies, 0.5 mg/kg between 1 and 16 years of age and 40 mg as the maximum dose.[32]

Surgical recommendations have been controversial and they remain unchanged for asymptomatic patients.[34] The decision becomes difficult in some cases.

Eighty-five percent of the children with a prenatal diagnosis of hydronephrosis do not have a real obstruction and so they do not require surgery and will improve spontaneously. But the true ureteropelvic obstruction should be operated on as soon as possible to avoid kidney damage. The difficulty of the decision can be minimized with a very strict protocol.[35] The degree and severity of prenatal hydronephrosis is determined after birth by evaluating the general condition of the child, the degree of dilatation by echography, and the radioisotope excretion curve after administering furosemide. Dilatation alone does not imply obstruction. However, if all the remaining parameters indicate the presence of obstruction, early surgical treatment is recommended.[36] Surgical criteria used by the Society for Fetal Urology are concurrence of the increase of the hydronephrosis and a worsening of the radioisotopic clearance of over 10% between studies.[37] Obstruction has been defined as such a state of urinary drainage that if not corrected, it will limit the final functional potential of the developing kidney.[38] Early repair is recommended if obstruction is demonstrated,[39] because the delay in alleviating the obstruction may allow rupture of the basal tubular membrane and promote the transition of the epithelium to myofibroblasts, a process that is probably irreversible.[39,40] Surveillance and control of the patient before a decision is made must be very strict in some cases.

Based on different criteria found in the literature and on the clinical evolution of our patients, we think that surgery (pyeloplasty) is indicated if the renographic pattern is obstructive or uncertain, the relative function falls below 40% or hydronephrotic dilatation increases in follow-up ultrasound studies. The obstructive cases that do not receive the benefits of timely pyeloplasty may progress to a renal function deterioration, which may become irreversible, requiring the substitution of reconstructive surgery (pyeloplasty) by mutilating surgery (nephrectomy).

Whichever the treatment used (expectant or reconstructive), hydronephrosis must be followed-up for years to evaluate the growth and functioning of the kidneys. Another important element is the control of arterial hypertension.[22] In surgically treated cases, non-steroid anti-inflammatory drugs should not be administered, and if hypertension or significant proteinuria appear, they must be treated resolutely.[39]
The Skin-to-Skin Method (Kangaroo Care): Age Adjusted Evaluation of Neuro-behavior at One Year

Dr. Ramón Acosta Díaz (1); Dr. Carlos Enrique Piña Borrego (2); Dr. Luis Ramón González (3); Dr. Lucía López Fernández (4)

ABSTRACT:
In order to evaluate neuro-behavior in premature babies during their first year of life with the Bayley test using the skin-to-skin method, 120 live births at the Abel Santamaría General Teaching Hospital in Pinar del Río were studied between January 1 and June 30, 2000 (study group). The control group included live premature infants born between July 1 and December 31, 2000 using the traditional method. Throughout the evaluation, using the Bayley test, a formula was used that gathered their clinical history, primarily of morbidity and perinatal asphyxia, as well as their nutritional regimen and neurological observation from 6 to 12 months of adjusted fetal age. A database was created in Microsoft Excel-2000; the Chi-Square table test was used with a confidence factor of p<0.05. Significant differences were observed in neuro-behavior between those premature infants who had the skin-to-skin method and those using the traditional method.

Keywords: PREMATURE/growth and development; NEUROLOGIC EXAMINATION/statistics and numeric data; NUTRITION; BREAST FEEDING; NUTRITIONAL CONDITION

Neurological development consists of the dynamic changes to the nervous system during development and growth. Neurological growth experiences rapid development between 29 and 40 weeks of gestational age. Therefore all agents that affect the fetus or newborn are very important in this first phase.[1]

The Graham method, one of the instruments used during the 1950’s, was the first behavioral examination for the newborn using methods of behavior as part of a precise neurological examination; Graham’s techniques included qualitative evaluations of tension and methods of motor responses, tactile responses, indices of irritability, ease with which the infant became calm and visual and auditory responses. Others such as Rosenblith, Parmelé, Scalon and Brazelton cited by Als,[2] created scales with more comprehensive evaluation of behavior in the newborn at term. The Ameil-Tisón[2] evaluation is able to differentiate between neurological depression and perinatal asphyxia as well as anticipating later results. We used Bayley[3] in this study because its mental and motor scales provide an easy, reliable and understandable evaluation of neurological organization and behavior in preterm infants and in their later years.

Inspired by the “kangaroo mother” methodology, since 1994 this institution has promoted skin-to-skin contact between mother and the newborn - independent of the seriousness of its condition - as it promotes a greater participation by the mother in attention to the preemie. The basic element of this method is the active participation of the mother by giving love and stimulation, and allowing the baby to breast feed whenever it wants. All this motivated research in which the neurobehavior of the children using this method was evaluated using the Bayley test and comparing them with a control group with similar characteristics.

METHODS

An investigative, analytical, longitudinal and case-control study survey was carried out among 348 newborn premature infants born at the Justo Legón Padilla Maternity Hospital during 2000; 120 infants were selected from a stratified randomized group. Of these, 60 selected between January 1 and June 20 followed the skin-to-skin method, while the remaining 60, with identical criteria, were treated by the conventional method from July 1, 2000 to December 31, 2000. This was designed to evaluate the influence of the skin-to-skin method on neuro-behavior through age one using the Bayley test method. The formula for the survey gathered their clinical history from birth, including weight, height, gestational age, degree of intrauterine development, as well as neurological follow-up through one year of age in an exam (at 6 and 12 months) created specifically for that purpose. All data was collected in a computerized table. The mothers involved in the study took classes and participated in group meetings on the importance of breast feeding and infant stimulation, ending with their arrival at the “skin-to-skin” room. The care and stimulation of the child by its mother began from when they were admitted to the Neonatology Department, continuing as they were transferred to the skin-to-skin area; this generally occurred when their weight exceeded 1,500g, though this depended on, among other conditions, their sucking reflexes. Here, the mothers kept their children on their breast day and night, dressing in clothing especially adapted for this up to their release. At home, this process continued until both felt the bonding was complete.
Criteria for inclusion: 1. Newborn (NB) of 2,000g and gestational age under 37 weeks. 2. The mother’s psychic and mental conditions were satisfactory. 3. Willingness of the mother to follow the skin-to-skin method (for the controls).

Bayley test: Applied to 6- and 12-month olds by a trained and licensed psychologist. Composed of two scales: mental and motor. This test showed a mode of conduct including the child’s attitude toward its environment.

Statistical method: A database in Microsoft Excel-97 was developed to log the results using the Chi-square table (all the results are shown in individual tables), for the control and the study. The results, culled from that database, appear in the following tables, with a p<0.05 rate of confidence.

RESULTS

Table 1 shows the behavior of some independent variables in both groups such as: gestational age, birth weight, gender, degree of intrauterine development (IUD), use of a respirator and low Apgar score, in which there was no significant difference between the two groups despite the fact that the preemies had lower gestational ages than the controls (under 31 weeks 14/7), and that within the control group the males rated higher than the females (38/22) for a value of p=0.0665.

| Table 1: Gestational Age, Weight, Gender, Use of a Respirator, Apgar Score and Intrauterine Development in Both Groups |
|---|---|---|---|---|---|
| Variable | Study | Control | p-value |
| Gestational Age (weeks) | - | - | 0.0636 |
| Fewer than 31 | 14 | 7 | |
| 31-33 | 25 | 21 | |
| 34-36 | 21 | 32 | |
| Weight (g) | - | - | 0.8433 |
| Less than 1500/1500-2000 | 18/42 | 19/41 | |
| Gender | - | - | 0.0665 |
| Male/Female | 28/32 | 38/22 | |
| Respirator | - | - | 0.6733 |
| Yes/No | 16/44 | 14/46 | |
| Low Apgar | - | - | 0.4076 |
| Yes/No | 9/51 | 6/54 | |
| Intrauterine development | - | - | 0.5096 |
| Very small for gestational development | 11 | 12 | |
| Small for gestational development | 6 | 10 | |
| Appropriate for gestational development | 43 | 38 | |

Table 2 illustrates behavior of the Bayley test results in the motor scale according to the adjusted age, in which we see that in the low-normal category at 6 months, 5 of 57 in the group studied were affected, while in the control group, 12 of 51 evaluated showed significant differences (p=0.0199); it was among the children treated by the traditional method that came out highest in this category.

In the high-normal group, significant differences (p=0.0195) were seen between the children treated by the skin-to-skin method: 24 of 57 rated higher than those who followed the conventional method, with only 10 out of 51. For the mentally retarded, average and superior groups, no significant difference was noted between the groups. Similar results were seen at 12 months adjusted age.

| Table 2: Bayley Test Results According to Adjusted Age: Motor Scale |
|---|---|---|---|---|---|
| a) At 6 months Value of the Bayley Test | Mentally Retarded | Low Normal | Average | High Normal | Superior |
| Study n=57 | 1 | 5 | 5 | 22 | 35 | 24 | 33 | 5 | 52 |
| Control n=51 | 3 | 48 | 12 | 39 | 23 | 28 | 10 | 41 | 3 | 48 |
| Value of p | 0.2568 | 0.0355 | 0.5507 | 0.0120 | 0.5670 |
| b) At 12 months Value of the Bayley Test | Mentally Retarded | Low Normal | Average | High Normal | Superior |
| Study n=58 | 1 | 57 | 4 | 54 | 22 | 36 | 27 | 31 | 4 | 54 |
| Control n=45 | 2 | 43 | 10 | 35 | 20 | 25 | 10 | 35 | 3 | 42 |
| Value of p | 0.4272 | 0.0276 | 0.5669 | 0.0173 | 0.9633 |

Table 3 reflects results of the Bayley test mental scale which shows that in the low-normal category for 6-month olds, 5 of 57 children in the study were affected, while in the control group, 13 of 51 were affected; significant differences were seen (p=0.0199). In the normal-high study, 23 of 57 children were affected, while 10 of 51 in the control study were affected (p=0.0195). In the average and superior categories, no significant differences were found with (0.3587) and (0.1907) respectively. However, the control study results prevailed. The same thing was seen at 12 months for corrected age.
Table 3: Bayley Test Results by Adjusted Age: Mental Scale

Abel Santamaría General Teaching Hospital, Pinar del Río:
January 2000 – March 2002

<table>
<thead>
<tr>
<th>Value of the Bayley Test</th>
<th>Low Normal</th>
<th>Average</th>
<th>High Normal</th>
<th>Superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) At 6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study n=57</td>
<td>Yes 5</td>
<td>No 34</td>
<td>Yes 23</td>
<td>No 10</td>
</tr>
<tr>
<td>Control n=51</td>
<td>Yes 25</td>
<td>No 24</td>
<td>Yes 36</td>
<td>No 49</td>
</tr>
<tr>
<td>p Value</td>
<td>0.0199</td>
<td>0.5387</td>
<td>0.0195</td>
<td>0.1907</td>
</tr>
<tr>
<td>b) At 12 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study n=58</td>
<td>Yes 23</td>
<td>No 34</td>
<td>Yes 21</td>
<td>No 44</td>
</tr>
<tr>
<td>Control n=45</td>
<td>Yes 11</td>
<td>No 34</td>
<td>Yes 24</td>
<td>No 44</td>
</tr>
<tr>
<td>p Value</td>
<td>0.0279</td>
<td>0.4947</td>
<td>0.0211</td>
<td>0.2736</td>
</tr>
</tbody>
</table>

Source: Data Collection form
Applied proof: Chi table (X²)

Table 4 represents the Bayley test results at 12 months of adjusted age according to critical morbidity at birth. Here we see that the mental scale for the low, normal and average showed scarcely any differences between children from the study group (19/12) and those in the control group (20/15), for a value of p=0.9273. Similar results were seen in the high (high normal–superior) categories, for a value of p=0.6381. The motor scale was similar, and there were no significant differences between those who were ill and those who were not: p=0.7972 for the lowest scales and p=0.8450 for the high scales.

Table 5 shows the Bayley test results at 12 months of adjusted age according to nutritional state, in which we look at the mental scale. The results show that in children below the 10th percentile, the lower categories look similar in both groups, while the children in the control group (24/10) rated higher, and there were significant differences (p=0.0272). In the motor scale test, the results of children evaluated at less than the 10th percentile in the lower categories were similar in both groups, while those in the high categories outperformed the others in the control groups (7/2), although there were no significant differences (p=0.1007). Results for children placed above the 10th percentile were similar in both groups in the lower categories and the children in the control groups were above those in the high categories (24/11), and there were significant differences (p=0.0451).

DISCUSSION

In their series on premature children from 0 to 12 months who took the Brazy neurobiological test, Nunes and others[5] received samplings with similar characteristics for gestational age and birth weight. Other authors, such as Barrera and others[6], found similar results with application of the Denver test on underweight newborns up to 2 years of adjusted age. Use of a respirator at birth, the Apgar score under 5 min and the degree of intrauterine development, are important elements that should be considered in any research on neuro-behavior in premature children because of implications to the short- and long-term development of the central nervous system. Therefore we feel fairly certain that these characteristics showed similar results in both surveys.

The motor test evaluates elements such as muscular tone and its reflection in the structure of the body, mobility and muscular strength, deep tendon reflexes and responses by the soles of the feet, an indication of neurological soundness. Tests conducted during lactation tend to underscore that motor activities are fundamentally different at other ages where other indicators prevail. These results show the benefits of the skin-to-skin method. O’Hara and others[7] used the Denver Developmental Screening Test-II (DDST-II), and found better results for the motor scale in the group with early stimulation and multidisciplinary support at home. Sajaniemi and others[8] also reported similar results using the Infant Behavior Record, part of the Bayley scales.

Samsom[9] found better muscular response in the motor evaluation of high-risk premature infants during early lactation in children who were enrolled in programs of developmental support.

Feldman and others[10] found that children enrolled in premature intervention programs had better cognitive development than other groups. Gomes[11] also observed that mental development in premature babies that received auto-motor sensory stimulation was quicker and necessitated shorter hospital stays when compared to children treated by traditional methods. Francois[12] also observed that even premature babies with multiple risk factors (antenatal, perinatal and socio-economic), had improved mental scores when they re-
Critical morbidity at birth acts in synergy with the appearance of developmental results (serious handicaps, sensory changes and minimum cerebral dysfunction). Liley and Stark[13], for example, stated that 10% to 15% of premature babies who survived serious respiratory distress syndrome had long-term neurological deterioration. Using the Bayley scales for infant development, Perad and Berger[14] linked chronic lung disease in premature babies to retarded development of motor coordination and deteriorated visual perception. Fischer and others[15] found that there is better cardio-respiratory stability for children using the kangaroo care method as it reduced the damaging effects of critical morbidity to the central nervous system. In his work, Brietbach[16] found that one advantage of this method is reduced respiratory distress and apnea, increased concentration of arterial oxygen, lower bradycardia episodes and shortened hospital stays. All of this contributes to minimizing the long-term negative neurological effects. The results of this study do not coincide with the referenced medical literature since we did not observe that the skin-to-skin method influenced neuro-behavior in children with critical morbidity at birth. This could well be related to the size of the study, the brief period during which the study was conducted and the fact that the Cuban health system has prioritized primary care for premature infants.

There is no doubt that nutritional state proportionally impacts neuro-development. Proper nutrition allows the body to assimilate the essential nutrients needed for good cellular functions. All premature newborns are at nutritional risk because of: 1. Scarce nutritional deposits; 2. Better growth indices by utilizing nutrients faster; 3. Immature physiological systems; and 4. Incomplete knowledge of required nutrients. The Central Nervous System cannot avoid this. In this study, one may observe the positive influence the skin-to-skin method had on neuro-behavior and nutritional state. A study by Van Staveran and Dagnelie[17] found that well-nourished children given the early stimulation method had higher intelligence coefficients; however, this method produced no results in poorly nourished children. Pinelli and others[18] stated that adequate nutritional support in premature babies with low birth weights helps the development of higher intelligence levels, especially among children enrolled in development support programs. Larguier and others[19] also found better neuro-behavior in very low birth weight newborns given adequate nutrition and early development support.

REFERENCES

Infant Mortality Due to Congenital Malformations

Riceldys Caridad Ramos Soto, (1); Yanela Molina Chui, (2); Eglis García Alcolea, (3); Tutor: Fara María Ricardo(4)

ABSTRACT:

The following paper aims to clinically and epidemiologically characterize children under one year of age who have died as a result of congenital malformations in the last five years. A descriptive and cross-sectional study on infant mortality caused by congenital malformations was carried out among 134 patients in Santiago de Cuba province between January 1999 and December 2003. The variables considered in the study were sex, age at time of death, birthweight, intrapartum life, municipality of origin, clinical diagnosis, and maternal age. A study was undertaken of perinatal codification cards from the Statistics Department of the Provincial Health Board, of patients who died before one year old. In the five years studied, most children who died as a result of congenital malformations were female, born at term with normal birth weight, died more than 72 hours after birth, and were children of mothers of adequate reproductive age. The main cause of death was congenital heart disease, including interventricular septal defects. Santiago de Cuba stands out as the municipality with the highest incidence, followed by San Luis and Palma.

INTRODUCTION

Congenital malformations are macroscopic structural defects present at birth that originated during prenatal development as a result of a serious qualitative-quantitative alteration in embryofetal development. Their medical magnitude and importance vary considerably in relation to the type of defect. Embryonal and fetal development can be altered by various external factors such as radiation, heat, chemicals, infections, and maternal diseases. These external agents are called teratogens (from Greek: teratos = monster, and genes = births). Congenital anomalies may also be caused by genetic alteration of the fetus, or by the coupling of a teratogenic agent and a genetic alteration.

Congenital malformations are the number one cause of death in the world’s most developed countries. In Cuba they are the second cause of death in children under one year of age, surpassed only by perinatal affections. In our province, they are the first cause of death in this age group; for this reason, we have written this paper to clinically and epidemiologically characterize children under one year old who have died as a result of congenital malformations over the last five years.

OBJECTIVE

To clinically and epidemiologically characterize children who have died under one year of age as a result of congenital malformations in the last five years.
METHOD

Descriptive and Cross-Sectional Study
Infant Mortality Caused by Congenital Malformations
Santiago de Cuba Province
January 1999 - December 2003
134 patients
Variables studied: sex, birthweight, age at time of death, municipality of origin, clinical diagnosis, maternal age, and intrauterine life
Study of perinatal codification cards of patients who died under one year of age.
Statistics Department, Provincial Health Board
Summary measurement: Absolute numbers and Percentage

RESULTS' ANALYSIS AND DISCUSSION

Graphic 1 shows female predominance.

Graphic 1: Children who Died under One Year of Age, According to Sex & Year of Death

Graphic 2: Children who Died under One Year of Age, According to Birthweight and Year of Death

Graphic 3: Children who Died under One Year of Age, According to Mother's Age and Child's Year of Death

Graphic 4: Children who Died under One Year of Age, According to Mother's Age and Child's Year of Death

Graphic 2 shows that birth weight ranged from 2500g to 4000g, i.e. normal weight.

Graphic 3 shows predominance of children who were born between weeks 37 and 41.6 (at term).

Graphic 4 shows predominance of children who died whose mothers’ ranged between 18 and 34 years of age, i.e. mothers at adequate reproductive age.
Table 1 shows predominance of children whose death occurred after the first 72 hours; there are 81 children (60.4%) in this group.

**Table 1**: Children who Died under One Year of Age due to Congenital Malformations, According to Age at Death & Year of Death

*Source: Perinatal codification cards, form 1805*

<table>
<thead>
<tr>
<th>Age</th>
<th>1999 No.</th>
<th>2000 %</th>
<th>2001 No.</th>
<th>2002 %</th>
<th>2003 No.</th>
<th>2003 %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-24 hours</td>
<td>2</td>
<td>12.5</td>
<td>7</td>
<td>18.9</td>
<td>2</td>
<td>7.6</td>
<td>23</td>
</tr>
<tr>
<td>25-48 hours</td>
<td>3</td>
<td>18.7</td>
<td>4</td>
<td>10.8</td>
<td>3</td>
<td>11.5</td>
<td>5</td>
</tr>
<tr>
<td>49-72 hours</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>10.8</td>
<td>-</td>
<td>10.7</td>
<td>1</td>
</tr>
<tr>
<td>73 hours - 6 months</td>
<td>8</td>
<td>50</td>
<td>19</td>
<td>51.3</td>
<td>20</td>
<td>76.9</td>
<td>81</td>
</tr>
<tr>
<td>7 months - 1 year</td>
<td>3</td>
<td>18.7</td>
<td>3</td>
<td>8.1</td>
<td>1</td>
<td>3.84</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2 shows congenital heart disease as the main cause of death in these malformed children, (36 cases), among which interventricular septal defects shows the highest number, with 15 deceased children.

**Table 2**: Children who Died under One Year of Age due to Congenital Malformations, According to Cause & Year of Death

*Source: Perinatal codification cards, form 1805*

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>1999 No.</th>
<th>2000 %</th>
<th>2001 No.</th>
<th>2002 %</th>
<th>2003 No.</th>
<th>2003 %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transposition of the great vessels</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Interventricular septal defects</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Interauricular septal defects</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Diaphragmatic hernia</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Pulmonary stenosis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Trisomy 18 Syndrome</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Heart disease</td>
<td>4</td>
<td>10</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Pulmonary atresia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Esophageal atresia</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Tricuspid atresia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pulmonary hypertension</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>2</td>
<td>-</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Renal disease</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Arrhythmia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mitral atresia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Intestinal atresia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Pulmonary hypoplasia</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 3 shows Santiago de Cuba as the municipality with the highest incidence, followed by San Luís and Palma.

**Table 3**: Children who Died under One Year of Age due to Congenital Malformations, According to Municipality of Origin & Year of Death

*Source: Perinatal codification cards, form 1805*

<table>
<thead>
<tr>
<th>Municipality</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sgto. de Cuba</td>
<td>6</td>
<td>37.5</td>
<td>15</td>
<td>40.5</td>
<td>13</td>
<td>50</td>
</tr>
<tr>
<td>Contramaestre</td>
<td>2</td>
<td>12.5</td>
<td>4</td>
<td>10.8</td>
<td>1</td>
<td>3.8</td>
</tr>
<tr>
<td>San Luís</td>
<td>1</td>
<td>6.2</td>
<td>6</td>
<td>16.2</td>
<td>2</td>
<td>7.6</td>
</tr>
<tr>
<td>Palma</td>
<td>2</td>
<td>12.5</td>
<td>3</td>
<td>5.1</td>
<td>2</td>
<td>7.6</td>
</tr>
<tr>
<td>Guaná</td>
<td>1</td>
<td>6.2</td>
<td>1</td>
<td>2.7</td>
<td>1</td>
<td>3.8</td>
</tr>
<tr>
<td>II Frente</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>10.5</td>
<td>2</td>
<td>7.6</td>
</tr>
<tr>
<td>III Frente</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3.8</td>
</tr>
<tr>
<td>Songo-La Maya</td>
<td>3</td>
<td>18.7</td>
<td>3</td>
<td>5.1</td>
<td>3</td>
<td>11.5</td>
</tr>
<tr>
<td>Mella</td>
<td>1</td>
<td>6.2</td>
<td>1</td>
<td>2.7</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

CONCLUSIONS

In the five-year period that was studied, most children dying from congenital malformations were female, born with normal birth weight and at term. The majority of deaths occurred after the first 72 hours of life, and most mothers were of adequate reproductive age. The main cause of death for these malformed children was congenital heart disease, with a high incidence of interventricular septal defects. Santiago de Cuba municipality shows the highest incidence, followed by San Luís and Palma.

THE AUTHORS

1. Second Year medical student at the Higher Institute of Medical Sciences, Santiago de Cuba
2. Second Year medical student at the Higher Institute of Medical Sciences, Santiago de Cuba
3. Fifth Year medical student at the Higher Institute of Medical Sciences, Santiago de Cuba
4. First Degree Specialist in Embryology at the Higher Institute of Medical Sciences, Santiago de Cuba
Background. The number of nephrons in humans varies considerably under normal circumstances, and retarded intrauterine growth has been reported to be associated with a significant reduction in nephron number. Low nephron number may be an independent risk factor for the development of hypertension. We therefore decided to evaluate the relationship between body weight at birth and the number and size of nephron units.

Methods. We examined coronal sections of the kidneys of 35 neonates who died within two weeks of birth because of hyaline membrane, infectious complications, brain hemorrhage, or perinatal hypoxia and had no urinary congenital malformations. Nine of them (5 males and 4 females) were between 36 and 37 weeks of gestation, and the rest had 38 or more weeks of gestation. Eighteen neonates weighed less than 2500 g at birth [low birth weight (LBW); 9 females and 9 males], and 17 had weights above this value [normal birth weight (NBW); 8 females and 9 males]. In each section, glomeruli present in four sequential subcapsular microscopic fields, corresponding to 0.6 mm², were counted; in addition, the area of each of 65 consecutive glomeruli was determined by a computerized measurement system. Glomerular volume was calculated from the glomerular area. Linear regression analysis was used to test the relationship between glomerular number and size and the weight at birth.

Results. The number of glomeruli per 0.6 mm² of renal cortex was 92.9 ± 4.85 in the LBW and 105.8 ± 3.91 in NBW (P < 0.0001). Glomerular volume (µ³ X 10⁵) was 529.1 ± 187.63 in the LBW group and 158.0 ± 49.89 in the NBW group (P < 0.0001). The glomeruli occupied 8.59 ± 1.38% of the kidney area under examination in the LBW group and 14.3 ± 2.75% in the NBW group (P < 0.0001). There were significant direct correlations between the weight at birth and the number of glomeruli (r = 0.870, P < 0.0001) and area occupied by glomeruli (r = 0.935, P < 0.0001). There were inverse correlations between the number of glomeruli and the volume of the glomeruli (r = 0.816, P < 0.0001) and the weight at birth and glomerular volume (r = 0.848, P < 0.0001). These findings were independent of sex and race (black vs. white). Essential arterial hypertension existed in 38.9% of the mothers of children with LBW and in 5.9% of the mothers of children with NBW (P < 0.05). Smoking habits existed in 50% of the mothers of LBW children and in 11.8% of the mothers of NBW children (P < 0.05).

Conclusion. There are strong correlations between glomerular number (direct) and size (inverse) with LBW in this cohort. Endowment with decreased nephron numbers may be a risk factor for hypertension and the rate of progression of renal disease.

Keywords: LOW BIRTHWEIGHT, ARTERIAL HYPERTENSION, SMOKING, PROGRESSIVE RENAL DISEASE, INTRAUTERINE GROWTH.

Received for publication September 28, 1999 and in revised form February 4, 2000 Accepted for publication March 10, 2000

@ 2000 by the International Society of Nephrology

Low birthweight (LBW) is an important public health problem in developing countries [1]. In 1988, Brenner, Garcia, and Anderson noted that the number of nephrons was inversely correlated with the risk of developing hypertension in rats and, taking into account the population based hypertensive risk in humans, put forth the provocative hypothesis that decreased nephron number is an independent risk for hypertension [2]. Since these classic studies [2], other workers have shown that LBW is associated with a higher incidence of high blood pressure in adulthood [3 8], and highlighted mechanisms, which if present in fetal life, would be relevant in the appearance of essential hypertension [6].

Since low protein diets are experimentally associated with LBW, a decreased number of nephrons and increased risk of hypertension [9], Mackenzie, Lawler, and Brenner [10] postulated that low nephron number, genetically determined or acquired, is a likely explanation for the increased risk of hypertension in children with low weight at birth. In support of these postulates, studies have shown that spontaneously hypertensive rats are endowed with 10 to 25% fewer nephrons than their normotensive counterparts [10 12].
The present work was done to explore the relationship between weight at birth and the number and size of the nephron units existing in the human kidney.

**METHODS**

Coronal sections of kidneys from 35 children who died in the neonatal period from nonrenal causes and had no renal or urinary malformations were obtained from the Hospital Docente Gineco Obstétrico “Ramón González Coro” in the period from January 1984 to January 1998. The gestational age of the infants at birth ranged from 36 to 41 weeks. Eighteen infants had a LBW (<2500 g), and the remaining 17 had a normal birthweight (NBW; >2500 g). The causes of death were hyaline membrane (N = 10), neonatal sepsis/pneumonia (N = 16), hypoxic complications (N = 9), and brain hemorrhage (N = 1). Estimates of the dietary protein intake in the mothers could not be made.

The kidneys in these infants had been fixed in formalin 15% and embedded in paraffin at the time of autopsy. For the present study, the kidneys were retrieved, and four serial coronal sections 2 µ thick were done with a vertical Leitz microscope. These sections were stained with hematoxylin and eosin for morphometric studies.

Histomorphometric analyses were done by a renal pathologist (C.M.) who was blinded as to the origin of the biopsy. Analyses were done with the help of a computerized area measurement system (DIGIPAT; Eicisofr, Cuba, 1995) supported by Windows 3.1 that includes capture of the image from an Olympus BM 2 microscope and digitalization of this image (BLASTER video card). The computerized system is commercially available has been officially validated (registry #TO220020621200).

The glomeruli counted were from the cortical area immediately under the capsule. Four consecutive fields to the right, representing an area of 0.6 mm², were chosen in each instance. The amplified image was used in the computer to delineate the Bowman capsule. At least 65 glomeruli, which could be completely delineated, were used for analysis in each case. The system analyzes directly the glomerular area, the maximal diameter, and the percentage of the total area occupied by the glomeruli.

The glomerular volume was calculated with the use of the following formula:

\[ V_g = \left( \frac{8}{k} \times A_c \right)^{\frac{3}{2}} \]

Where \( B = 1.38 \) is the shape coefficient of spheres, and \( k = 1.1 \) the size distribution coefficient. \( A_c \) is the glomerular volume [13].

Statistical comparisons between the LBW and NBW groups were done by nonparametric Mann Whitney tests and Fisher’s exact test with the help of a commercial statistical program (GraphPad InStat®) and the relationships between variables were explored with a commercial statistical graphs package (GraphPad Prism®).

Table 1 shows the comparison of the LBW and NBW groups with respect to weight, sex, gestational age and number of glomeruli, and glomerular morphometric data. All of the children had more than 36 weeks of gestation. Prematurity was present in nine children (5 males and 4 females). Arterial hypertension was found in 16 mothers of the children in this study. Eight of them were previously nornotensive and had hypertension associated with gestation; in the remaining eight, essential hypertension was present prior to pregnancy. Essential hypertension existed in seven mothers of the children with LBW (38.8%) and in one mother of the children with NBW (5.9%; \( P < 0.05 \)). Gestational hypertension occurred in five and three mothers of the LBW and NBW children, respectively (\( P = \text{NS} \)). Nine mothers of children in the LBW group (25.7%) were smokers, while only two mothers of the NBW children were smokers (5.7%, \( P < 0.02 \)). The information about the fathers’ hypertension and smoking was not available. There were no significant sex or race (black vs. nonblack) differences between the LBW and the NBW groups.

There was a significant (\( P < 0.0001 \)) positive correlation between weight at birth and the number of glomeruli (Fig. 1), as well as the relative area occupied by the glomeruli in the renal cortex (Fig. 2). There were significant (\( P < 0.0001 \)) negative correlations between the weight at birth and the glomerular volume (Fig. 3) and between the number and the volume of the glomeruli (Fig. 4). The findings of glomerular volume and glomerular number were independent of sex and race.

**DISCUSSION**

The total number of nephrons is a biological variable that is defined prior to birth. Approximately 60% of the nephron population develops during the third trimester of pregnancy, up to 36 weeks [14]. No new nephrons are formed after birth [14], and the total number of nephrons in humans ranges between 300,000 and 1.1 million, with a mean of approximately 600,000 [15 17]. The number of nephrons is a critical variable in the progression to chronic renal failure, because reductions in nephron number result in glomerular hypertension in the remaining nephron population, which, in turn, triggers a vicious cycle of progressive loss of functioning units [15]. Reduced number of nephrons at birth may be associated with a diminished resistance to any mechanism of renal damage in adult life.

Brenner and coworkers have recruited impressive evidence in favor of the theoretical construct that low nephron number is a risk factor for essential hypertension [10, 18, 19]. For instance, demographic studies have shown that populations with a very high incidence of essential hypertension have
a relatively small kidney size, suggesting a diminished number of nephrons [20, 21]. The African American population, known to have a high incidence and increased severity of arterial hypertension (abstract; Falkner et al, *J Am Soc Nephrol* 7:1549, 1996), appears to be endowed with smaller numbers of larger glomeruli (abstract; ibid) [22], changes considered to be evolutionary because in tropical conditions, sodium conservation would be an adaptive priority [19, 23, 24].

Our findings are in agreement with the observations of others, in that smoking and arterial hypertension in the parents are risk factors for intrauterine growth retardation and LBW [25 27]. Studies have shown that marked retardation in intrautero growth exerts profound effects in renal development. LBW is associated with a decreased number of nephrons and hypertension in adulthood. In full term pregnancies with LBW caused by delayed fetal growth, there is a decrease of 20% in the number of nephrons [3, 24]. In rats, similar effects have been noted [11]. In the present work, we have documented a 20% reduction in nephron number in children with LBW (Table 1).

In addition, we have found a close positive relationship between weight at birth and the number of glomeruli, as well as a negative correlation between number and volume of glomeruli. Future research should be directed to clarify the relationship between dietary protein intake in pregnancy, LBW, and nephrogenesis.

Reprint requests to Reinaldo Mañalich, M.D., c/o Bernardo Rodríguez Iturbe, Apartado Postal 1430, Maracaibo 4001 A, Venezuela. E mail: bri@iamnet.com

REFERENCES

2. BRENNER BM, GARCIA DL, ANDERSON S: Glomeruli and blood pressure: Less of one, more of the other? *Am J Hypertens* 1:335-347, 1988
5. GRUPO COOPERATIVO ESPAÑOL PARA EL ESTUDIO DE FACTORES DE RIESGO CARDIO-VASCULAR EN LA


9. NYENGAARD JR, BENDTSEN TF: Glomerular number and variability is the rule: Causes and consequences. Lab Invest 79:515-527, 1998


CUBAN MEDICAL LITERATURE ABSTRACTS

ABSTRACTS

CUBAN MEDICAL LITERATURE ABSTRACTS

Origin, Present Situation and Prospects for the National Network of Pediatric Surgery

Rafael M. Trinchet Soler, PhD; Margarita Pedrianes Vigo

This paper presents the strategies and results attained in informatics during the development of the National Network of Pediatric Surgery and its headquarters, the “Octavio de la Concepción de la Pedraja” Pediatric Teaching Hospital in Holguín. This hospital was chosen in 2003 as the venue for the telecommunications network project that will support the management of pediatric surgery throughout the country. It created six main areas of work, namely, the institution’s internal network, the national network, software and websites, theoretical informatics projects, knowledge management, as well maximum exploitation of the best equipment in every territory. The results in the telecommunications development of the National Network of Pediatric Surgery and its headquarters show that it is possible to achieve gradual computerization in a hospital, with limited material resources, if human resources are developed to the best of their capacities.

Keywords: NETWORKS, TELECOMMUNICATION, PEDIATRIC SURGERY, CUBA


Costs of Prenatal Care for Women - Havana, 2000

Giselda Sanabria Ramos, Ana María Gálvez González, Manuel Álvarez Muñiz

A partial economic assessment is presented in the form of cost analysis of the “pocket expenses” group. The sample included 340 women who were split into two groups: a control group and an intervention group. This research was carried out in 10 polyclinics in three municipalities in Havana City, the women of which generally give birth in “América Arias” hospital. During this research, the polyclinics were also part of a wider study which included economic assessment; this was classified as a controlled multi-centric random trial, and carried out under the auspices of the World Health Organization, to validate a care protocol in four prenatal visits in relation to the regular program. The sample was calculated with a reasonable extent for the average value reliability interval. The basic source of information was the questionnaire applied to all women in the sample. The main results highlight the peculiarities of the costs under study not only between the two groups, but also between polyclinics. These results are rendered in abso-

Felix Orlando Dickinson Meneses, MD; Antonio Esteban Pérez Rodríguez, MD

A description is made of some epidemiological features of Bacterial Meningoencephalitis (BME) in Cuba between 1998 and 2000, according to available data recorded by the National Bacterial Meningoencephalitis Surveillance. Five hundred and thirty cases were reported in children under 15 years of age in the whole country during this period. The age group that was most affected was that of children under 5 years old. The most frequently identified agents were Haemophilus influenzae type b (Hib), Streptococcus pneumoniae (Spn), and Neisseria meningitidis (Nm). The incidence of Hib was four times lower as a result of massive vaccination, especially in children under 5. Spn has been the main BME-causing and most lethal agent as a result of massive vaccination, especially in children under 5 years of age. The under-one-year age group being most severely affected. Future studies will make it possible to go deeper into the epidemiology of these affections and to monitor the changes resulting from intervention.

Keywords: MENINGOENCEPHALITIS/EPIDEMIOLOGY; MENINGOENCEPHALITIS/IMMUNOLOGY; EPIDEMIOLOGICAL SURVEILLANCE; BACTERIAL VACCINES; CHILDREN; BACTERIAL MENINGITIS/EPIDEMIOLOGY; BACTERIAL MENINGITIS/IMMUNOLOGY.

Source: Revista Cubana de Pediatría, 74:2.

Cuban Maternity Homes: A Comprehensive Study

Amanda Pérez

Cuba is known throughout the world as an advanced public health state. Its international reputation is immediately confirmed by an analysis of the maternal and infant health indicators of countries in Latin America and the Caribbean, and beyond. Cuba’s exceptional maternal and infant health indicators are associated with one of the country’s most unique and under-documented public health programs, hogares maternos, or maternity homes. Maternity homes reveal that attention to social risk factors during pregnancy can have an impressive effect on maternal and infant health indicators. Cuban maternity homes demonstrate to the international health and development community an innovative way to make pregnancy and childbirth safer.

Using qualitative methodology, this report examines: (1) evolution of maternity homes in Cuba from 1962 to present, (2) structure and function of maternity homes, as well as their health effects, (3) management and financing of maternity homes, and (4) best practices to be potentially utilized by other country’s public health programs.

Amanda Pérez was a student at the George Washington University School of Public Health when this paper was completed in October 2001; she can be reached at amandaperez@rcn.com.
TOP STORY

Cuban Nephrologists Present Isle of Youth Study at Nephrology 2005

By Gail A. Reed

Reporting on what international experts are calling a groundbreaking study for prevention of chronic kidney disease, Cuban nephrologists presented initial findings of the Isle of Youth Study (ISYS) to the 9th Central American and Caribbean Congress on Nephrology and Hypertension (May 14-18, Varadero, Cuba).

ISYS is the “flagship” in a trilogy of Cuban population-based studies aimed at identifying risk markers for chronic kidney disease (CKD), and their association with the development and progression of related conditions such as cardiovascular disease (CVD) and diabetes mellitus (DM). The research is expected to add significantly to information currently available globally, and provide the basis for a nationally applied prevention program in Cuba. ISYS is of particular importance, since it is a longitudinal study in total population, and could thus become the “Framingham” of renal and associated conditions.

“This is a unique study,” commented Dr. Giuseppe Remuzzi, chair of the Research Committee of the International Society of Nephrology’s Commission for the Global Advancement of Nephrology (COMGAN). “It is important not simply for emerging countries, but equally so for industrialized countries, and for those making health policy decisions in both. The study places Cuba in a unique position to convince the world about the need for prevention.”

The International Society of Nephrology (ISN) has called for urgent action regarding preventive strategies to stem the global epidemic of CKD, since research suggests that the one million people worldwide currently in dialysis are just the tip of an iceberg whose underlying mass reaches some 600 million people already suffering from some degree of kidney damage. “This is a disease that can be characterized today as catastrophic for the world population, for health systems and for governments,” declared Dr. Raúl Herrera, Director of Cuba’s Institute of Nephrology, in his ISYS report to the Congress, “because the epidemic’s implications now far surpass the debilitating effects on individuals and families, implying social and economic consequences to be faced by political decision-makers in both developed and developing countries.”

ISYS Phase One: Results and Comments

Dr. Herrera, who heads the ISYS team, reported that Phase One of the study - a community-based mass screening in urine for chronic kidney disease markers - is nearly complete. From November 15, 2004 through April 30, 2005 (5-1/2 months), over 90% of the Isle of Youth’s total population of 86,614 was screened to determine markers for renal damage.

While Phase One will continue until virtually all of the Isle of Youth’s population is surveyed, initial findings indicate...
that over 17% of persons tested so far have positive markers (proteinuria, hematuria, or microalbuminuria) for renal disease, and are now being studied for serum creatinine levels.

Dr. Herrera emphasized that the ongoing research will inform design and implementation of prevention strategies for CKD, but also for related conditions. “Phase One implies early detection of markers for kidney damage leading to identification of epidemiological characteristics and stratification of population for CKD, as well as for cardiovascular disease, diabetes and hypertension,” he told the Congress. “This will permit development of comprehensive preventive strategies for these non-communicable chronic diseases that have vascular damage in common.”

Specialists attending the Congress said they have high hopes for the Isle of Youth Study. “ISYS is a model program for the detection and prevention of chronic kidney disease,” noted Dr. Meguid El Nahas, Director of the UK’s Sheffield Kidney Institute, who noted that one million people are dying annually from end-stage renal disease. Canadian specialist Dr. John Dirks, Chair of the ISN’s Commission for the Global Advancement of Nephrology, told MEDICC Review (The study’s) strong integration of specialists, family doctors, scientists and other health professionals with the community is a truly amazing achievement. Cuba may well replicate what it’s done for its health professionals with the community is a truly amazing achievement of specialists, family doctors, scientists and other health professionals with the community is a truly amazing achievement of specialists, family doctors, scientists and other health professionals with the community is a truly amazing achievement.

Dr. Andre-Jacques Neusy, Director of New York University Medical School’s Center for Global Health, and Chief of Nephrology at New York’s Bellevue Hospital, placed the study in the context of the growing momentum to achieve global health equity: “Renal replacement therapy (dialysis and transplantation) is testimony to the failure of health systems. Prevention is the way to go: it is cost effective, and more importantly, will save millions of lives,” he said. “In today’s world,” he told MEDICC Review, “it is unacceptable that someone dies from preventable conditions just because they are poor. This makes global health equity the challenge of the 21st Century. We must learn from the Cubans’ experience and from research projects like ISYS, for which they should be congratulated. ISYS is the result of careful planning and also total commitment to improving health.”

ISYS Phase One: Opening the Door to Prevention

ISYS’ contribution to the evidence base that will inform prevention and treatment will grow over time, but aspects of its design and initial implementation already provide key guideposts:

- ISYS is a study in total population, not a sampling from which results are extrapolated. Thus, it will be the first study in Cuba that actually “photographs” CKD, CVD, hypertension and DM risk markers and development in an entire population group. In addition, the Isle of Youth is a virtual mosaic of the entire Cuban population, having been settled by immigrants from all parts of the main island.
- ISYS includes all children over one day old (even approximately 1200 under one year old), which allows for recording significant base-line and follow-up information on this vital population group.
- ISYS uses the family as the basic unit of study, permitting better follow-up of hereditary factors in risk, development and progression of CKD and other chronic diseases sharing the vascular-damage root.
- ISYS, through the Isle of Youth health system, guarantees treatment for all newly detected patients with CKD or other conditions.
- ISYS, through the Isle’s health system, can lead to the application of a community-based prevention and intervention model covering the whole population.

ISYS Phase One Methodology, Step by Step

Step One: The protocol. ISYS began in August-September, 2004 with completion of the study’s protocol, designed by Dr. Miguel Almaguer at Havana’s Institute of Nephrology.

Step Two: Specific training for health professionals. Over 200 health professionals from the Isle of Youth enrolled in small groups in a four-day seminar led by Institute of Nephrology specialists, as a pre-requisite to participate in the study. These included 103 family physicians and 115 family nurses throughout the Isle, as well as public health department personnel, directors and staff at the Isle’s three community polyclinics and the Heroes de Baire Hospital, where nephrology services and dialysis are also located. The Hospital also served as headquarters for the study, led locally by Dr. Rafael Aguilera Copello, Chief Nephrologist and his colleague, Dr. José Chipi Cabrera.
**Step Three:** Public information on the study’s aims and benefits was provided through the municipal government and health system; municipal radio, newspaper and television; and local organizations.

**Step Four:** Home visits were made by family doctors and nurses, to provide more detailed information to families, seek written informed consent, give instructions for collecting urine samples, and make appointments with family doctors to begin the screening.

**Step Five:** Actions at the family doctor-and-nurse office were undertaken: register study participants; fill out participant questionnaires, measure height, weight and BP; carry out urinalysis with Combur-10-Test (Roche) measuring density, ph, leukocytes, nitrates, proteins, glucose, ketones, urobilinogen, bilirubin and blood. If negative for proteinuria and hematuria, Micral-Test (Roche) were carried out for microalbuminuria in risk groups. If proteinuria, hematuria or microalbuminuria was positive, then serum creatinine study in blood was indicated.

**Step Six:** Actions at the community polyclinic, around which family doctor offices are clustered, were taken to: collect participant questionnaires from family doctor offices; file cumulative reports on questionnaires received and positive urine tests; receive blood samples; obtain sera and transfer to hospital; and implement quality control mechanisms.

**Step Seven:** Actions at the municipal hospital are being taken to receive and store sera, carry out serum creatinine studies, and inform creatinine values to polyclinics/family doctors.

**Step Eight:** Project Coordinating Center Actions are being carried out to receive questionnaires from polyclinics, introduce data into database; estimate GFR (Cockroft-Gault and Schwartz formulas); proceed to stratify CKD, calculate body mass index (BMI), classify patients according to BP, and provide this information to polyclinics and family doctors. The University of Informatics Sciences (UCI) in Havana, the municipal Medical Sciences Information Center, and the municipal Polytechnical Informatics School are collaborating in data processing and validation.

When the various phases of the study are completed, the information is expected to yield stratification of the Isle of Youth population for CKD, provide additional insight into related conditions, and inform prevention strategies at every stage of the disease.

**HEADLINES IN CUBAN HEALTH**

**Accompanied Labor: A New Step in Cuba’s Maternal-Child Health Program**

*By MEDICC Review Staff*

Improving the quality of care during labor and delivery has been the focus of obstetric professionals, staff and others involved in the specialty in Cuba. One of the principal issues is whether the father’s presence is allowed at the birth - currently not an option in most health institutions worldwide. Common practice in Cuba up to now has allowed for a female companion during labor. When women are accompanied during labor, results are positive: accompanied labor has demonstrated a significant reduction in terms of time in labor, the administration of pain killers, the number of caesareans, and unnecessary obstetric interventions. From February 1, 2005, fathers have been permitted in the labor room in every maternity hospital in Cuba.

The policy aims to add an important new element to Cuba’s Maternal-Child Health Program, which already registers excellent health indicators when compared to the rest of Latin America. As a result, medical institutions have been mandated to create adequate conditions to ensure implementation and provide for the presence of fathers at the birth of their children.

The World Health Organization has challenged nations to reduce maternal mortality by 75% for 2015 – a nearly impossible task for most developing countries. Nevertheless, Cuba has achieved a direct and indirect maternal mortality rate of 3.9 per 10,000 births and an infant mortality rate of 5.8 per 1,000 live births. Cuba’s infant mortality rate is the lowest in Latin America.

At present, virtually 100% of pregnant women in Cuba receive comprehensive medical attention before, during and after birth, including whatever additional or specialized assistance might be required on a case by case basis. Since 1992, a new system called the Conscientious Parenting Program has emphasized paternal participation, involving the future father from the early stages of pregnancy and including the possibility of his presence during delivery (see MR Feature: Cuba’s Maternity Leave Extended to Fathers, But Few Dads Take It, this issue).
Rock Star Treatment for Kids with Cancer

By Conner Gorry

The pediatric oncology specialists at the National Institute of Oncology and Radiobiology in Havana so suffuse the antiseptic air with determination and hope, it’s not surprising such resilience and verve rubs off on their young patients. What is surprising however, are the smiles on the faces of these children fighting against different forms of cancer, which grew even wider during a recent visit by progressive rock pianist Rick Wakeman. The rock star visited each child at their bedside and distributed toys at one of the regularly-scheduled parties organized by the Friends of Cuba Association for children with cancer.

Wakeman, known as a keyboard virtuoso (most notably with the rock band Yes), accompanied by his wife, members of his band and the blues group Cross Fire, spent a morning getting to know the 20 young patients currently receiving treatment at the cancer ward. It quickly became evident that the real stars are these young fighters. Through a translator, the visitors talked with 18-year old Jonier, a new arrival awaiting his lymphoma test results and cradled Yosledis, not yet a year-and-a-half old and fighting eye cancer. Several members of the entourage fought back tears with varying success during the experience.

The activity was one in a series coordinated by the Swiss organization Friends of Cuba Association that, along with Havana’s Sociedad Cultural José Martí, hosts cultural and recreational activities for Cuban kids suffering from terminal illnesses. Mario Ramseier, President and Founder of the Association, has been coordinating such parties and donations since 1997. On the day of the musicians’ visit, there were toys to spare and a computer for the ward among the donations.

During Wakeman’s visit, the children sat around in pajamas - some hooked up to IVs, most with knit caps or scarves covering their heads - laughing and singing with the clowns while eyeing the cake and piles of toys that awaited them. “For the four hours that they are not thinking about being sick,” says Erasmo Lazcano, Vice Director of the Sociedad Cultural José Martí. Indeed, the psychological boost provided by these visits was illustrated most eloquently by the glee on each child’s face when they received a stuffed tiger or an autograph from Mr. Wakeman.

“There are no words to express what I have seen here, how far ahead the doctors are... Everyone looks so well, it’s incredible. We will never forget what we’ve seen here,” said Wakeman about the visit. The children aren’t likely to forget either.

---

Cuba Close to Eradicating TB

By MEDICC Review Staff

In Latin America, Cuba is one of the countries with the highest probability of eliminating tuberculosis as a health problem in the near future. That means achieving an incidence lower than 5 cases per 100,000 inhabitants - already a reality in over 100 municipalities of 169 total across the country. At the end of 2004, the country showed the lowest tuberculosis prevalence rate in Latin America with a disease incidence of 6.4.

In spite of a decades-old cure, tuberculosis has caused the death of more than 200 million people since its cause was discovered in 1882. According to WHO, the tuberculosis epidemic is now worse than ever before, due to the emergence of drug resistant strains that threaten to revert the epidemic to ‘pre-antibiotic era’ levels. According to a WHO report published
in Geneva, each year up to 300,000 new cases of multi-resistant tuberculosis are reported in the world.

World Tuberculosis Day is commemorated on March 24th, with the purpose of building public conscience that tuberculosis is still an epidemic out of control in a large part of the world.

In Cuba, the National Program against Tuberculosis has three main pillars:

- BCG (or Bacille Calmette Guerin vaccine) vaccination of all neonates at an institutional level to guarantee they do not develop severe forms of the disease
- Thorough screening for all new cases in the groups of highest risk (adults over 50 years old)
- Permanent treatment control of the sick and their contacts by the family doctor and nurse

In 2004, 717 new cases were detected (69 fewer than in the same period for the previous year), while AIDS-related tuberculosis remains at very low levels and drug resistance does not constitute a health problem. Treatment for the patients is supplied by the family nurse during the six months the treatment lasts. The Cuban government guarantees 100% of the salary during that period and returns the person in their job once they are discharged. This favors rehabilitation and contributes to cure rates in the country of over 90%.

Cuba has eradicated six other diseases (poliomyelitis, diphtheria, measles, whooping cough, rubella and mumps), as well as tuberculous meningitis in children under one year old and neonatal tetanus. It also reported zero tetanus cases at the end of 2004.

---

**Cuba and Venezuela Step Up Health Cooperation: Sight-Saving Initiative for Region’s Poor**

By Gail Reed

In May, the Cuban and Venezuelan governments agreed to sponsor free ophthalmological care in Cuba for 100,000 hardship patients from throughout the Americas, including the USA. The initiative extends services that were already being offered to Venezuelans since July 2004, as a result of which several thousand low-income people recovered or improved their sight.

Under the arrangement, transportation, lodging and medical services will be covered jointly by the two governments, and some 600 specialists in Cuban health facilities will attend to participants in the program. It is estimated that some 4 million persons in Latin America alone suffer from some degree of untreated visual impairment.

The joint offer came at the end of President Hugo Chávez’s April visit to Cuba, where dozens of agreements were signed with President Fidel Castro’s government in both the public and private sectors. The accords were penned as a result of the new trade and cooperation plan outlined last December by the two governments, intended as a Latin American integration strategy buttressed economically by the area’s oil and other resources. It aims to bring greater social equity to the region.

Among the most important health-related actions, the governments have agreed to join forces to:

- Open 600 comprehensive diagnostic health centers and another 600 physical therapy and rehabilitation centers in Venezuela, as well as 35 high-tech medical facilities, all of which are to offer professional services free of charge to the public.

- Train 40,000 physicians and 5,000 allied health technicians in Venezuela, within the “Barrio Adentro II” Program (This program relies on Cuban doctors and other health professionals who serve in poor communities throughout Venezuela, including physicians with the academic credentials to teach in the new medical education effort being proposed., Eds.).

- Send another 10,000 Venezuelan high school graduates to Cuba for training in the medical and nursing fields, who will be dispersed throughout the hospital and polyclinic system on the island, and live with Cuban families.

**Ophthalmology and optometry services have been recently extended to community polyclinics in Cuba, like the Heroes de Girón Polyclinic, Cerro Municipality, Havana.**
Contribute to develop the Barrio Adentro Programs, with Cuba providing up to 30,000 physicians and other health professionals to sites throughout Venezuela by the end of 2005.

Continue to cooperate in the rehabilitation of Venezuelans with visual disorders, by providing surgery and other treatments in Cuba. Additional services will continue to be provided in Cuba for Venezuelan patients requiring specialized treatment in cardiovascular surgery, orthopedics, and other fields.

In addition, the Venezuelan and Cuban education ministries will be working to complete the literacy drive in Venezuela, expected to conclude with 1,406 million persons learning to read and write, thus virtually eliminating illiteracy in the country. Cuba’s own literacy campaign, conducted in 1961, reduced illiteracy to less than 4%, earning praise as “a great event in the educational field” from UNESCO in its 1964 report Methods and Means Utilized in Cuba to Eliminate Illiteracy.

Therapist Kay Sánchez works with a young Venezuelan patient at La Pradera rehabilitation center, Havana.

Cuban Vaccine Wins Gold Medal from WIPO

By MEDICC Review Staff

The World Intellectual Property Organization (WIPO) has awarded a Cuban biotech innovation with a gold medal for the sixth time since 1986. This year WIPO awarded the coveted prize to the pioneering synthetic vaccine Haemophilus influenzae type b (Hib). Safer than vaccines produced from live bacterium, the synthetic vaccine has been shown to provide 99.7% long-term protection against the bacterium that causes meningitis and pneumonia in infants (see MEDICC Review, Vol VI, No 1, 2004).

Dr. Vicente Vérez, Director of the Center for the Study of Synthetic Antigens of the University of Havana, received the award on behalf of the team that collaborated in its development, which included the Finlay Institute, the Pedro Kouri Tropical Medicine Institute, the National Center for Bioreagents, the Center for Genetic Engineering and Biotechnology (CIGB) and Canadian scientists at the University of Ottawa.

In its March-April 2004 issue, WIPO Magazine highlighted the success of Cuba’s biotech industry for its innovative developments. Praising Cuba as “an example of the considerable benefits to be reaped from a national policy of encouraging the growth of creativity (and harvesting its fruits),” WIPO reports that Cuba has “linked scientific skill with IP awareness,” with more than 150 biotech patents, almost 70 of which are being used in other countries.

The other five Cuban products previously awarded Gold Medals by WIPO in recognition of their significant health contributions are: Meningitis B vaccine (1986); Ateromixol or PPG (1996), a natural cholesterol-lowering medication; Biocida (2000), a medication effective against a variety of fungi and bacteria that destroy resistant strains of many antibiotics; HR3 (2002), a monoclonal antibody effective in the therapeutic treatment of advanced cancers; and Stabilak (2002), a milk preservative.

Haemophilus influenzae type b causes up to 600,000 child death under the age of five each year, primarily in developing countries. Although the conjugate vaccine that uses a natural molecule to produce the antigen was developed more than 13 years ago, approximately 90% of the world’s children are still not protected against the deadly disease. Since January 2005, all Cuban newborns have been vaccinated with the synthetic Hib vaccine.

Fat Attack! Cuba Confronts Obesity

By Conner Gorry

After many years of uncertain food supplies and lower than recommended daily caloric intake levels, recently released statistics indicate that Cubans are joining the ranks of the global obese. The trend worries health professionals in Cuba, who are confronting a rise in diseases such as diabetes and heart disease, two conditions related to obesity.

According to Dr. María Tosar Pérez, Director of the Center for the Development of Natural and Traditional Medicine in Havana, between 20% and 30% of the population - some 2 million Cubans - show some degree of obesity. Though this is still below levels found in most developed countries where obesity is up to between 25% and 45% of the population, the trend has sparked research and development in several specialties, most notably nutrition.

Several factors related to Cuban diet and lifestyle are blamed for the increase in overweight individuals, including a diet high in fat, cholesterol, carbohydrates and sugar, and lack of exercise. Indeed, traditional eating habits in a place where some consider meat, tobacco, liquor and sugar to be the four...
major food groups poses a challenge to dieticians and nutritionists. Genetic influences are also part of the equation.

In the 1990’s, severe food scarcity in Cuba saw caloric and vitamin intake levels plummet, leading to dramatic weight loss in adults and a concurrent spike in deficiency-related disorders including optic neuropathy, low birth weight and anemia in pregnant women. Slowly improving economic conditions, coupled with a multi-pronged public health campaign promoting fruit and vegetable consumption and exercise, however, have been showing marked results. According to Economic Minister José Luis Rodríguez, by the end of 2004, daily caloric intake in Cuba had reached 3,305 and 85.5 grams of protein, surpassing minimums set by the UN Food and Agricultural Organization of 2400 daily calories and 72 grams of protein.

Improbably, Drought Worsens in Cuba

By Conner Gorry

You know the quick sizzle and pop you get when you sprinkle water on a hot griddle? That’s the effect the few spurts of recent rainfall has had on Cuba’s shriveling crops, empty reservoirs and dried water pipes. It’s June already and it should be raining from Guantánamo in the east to La Bajada in the west, but it isn’t and it hasn’t, meaning the most dramatic drought to hit the country since 1901 is getting worse.

In February 2004, faced with a water shortage of critical proportions, the Cuban government convened a special committee to draw up short, medium and long term plans for confronting the drought. While kilometers of water pipe were constructed or repaired and conservation measures were enacted from the classroom to the kitchen, it still failed to rain. As a result, some two million of the island’s 11 million people currently do not have reliable running water.

Grasping the importance of effective water management, the National Institute of Hydraulic Resources sprang to action by identifying 4,000 kilometers of new pipe to be laid and plugging up leaks in existing pipes, which cause 50% of all water to be lost in transit. Water-filled trucks called pipas began hauling water to urban zones and neighbors lined up patiently to fill buckets and jugs. “My family only gets water every 28 days,” from the water trucks, says a woman from Camagüey, the hardest hit of all Cuban provinces. Trucking in water is a strategy for ensuring people’s ‘sustainable access to an improved water source,’ which 91% of the population enjoyed as of 2000, according to the most recent UNDP Human Development Report.

For the Ministry of Public Health, one of the most troubling possibilities posed by the drought is the re-emergence of preventable water-related diseases - eradicated long ago in Cuba. According to international guidelines, individuals need access to 250 liters of clean water a day to live healthy lives; 100 liters has been established as the absolute bare minimum. As I write this, many Cubans have access to only 20 liters of potable water a day, an alarming level of scarcity that has necessitated a proactive strategy to head off possible adverse public health effects. In order to prevent the emergence of communicable diseases and illnesses such as Hepatitis A, typhoid fever and intestinal parasites, the Ministry of Health has distributed updated hygiene guidelines for Camagüey, Las Tunas, Holguín and Havana, the provinces suffering most intensely from the water shortage. Particular stress is being placed on the selection and preparation of food and personal hygiene by workers in the public sector.

Nutrition is another area of concern, with many drought-specific policies addressing the need to assure the national food supply. The newest measure is a US$2.3 million credit for small farmers (who account for 65% of all agricultural sales nationally), that helps them to stay afloat by investing in new drought-resistant crops, digging new wells or erecting more efficient irrigation systems. At present, only 17% of small farms have irrigation in place. Pesticides, which can contaminate ground water, are also being phased out.

The agricultural sector has been especially devastated, with losses estimated at US$834 million. The sugar industry has been hammered: this year’s sugar harvest is estimated to squeak in at 1.5 million tons - down from 2.5 million tons in 2004 - and the lowest Cuba has reaped since 1909. The drought has so hurt cane production that Cuba has been forced to import sugar to meet domestic need, while exporting the domestic crop to satisfy trade agreements. Harvests of root vegetables - a staple in the Cuba diet - are down 20% from previous years as well. In addition, hundreds of thousands of cattle have been slaughtered or moved to areas with better water accessibility.

Although the UN hopes to increase by 50% the number of people worldwide who have access to safe, clean drinking water by 2015, by most accounts, that goal seems unlikely to be reached. Certainly there will be no sustainable resolution to the worldwide water crisis without international cooperation and coordination, a perennial topic of the annual UN World Environment Day, celebrated this year on June 5th. In the meantime, forecasters predict a dryer than usual June in Cuba, where rain is increasingly viewed as ‘blue gold.’

Cuba and Guatemala: Innovations in Physician Training

By Gail A. Reed

Some 187 Guatemalans will receive their MDs this summer in Havana. Diplomas in hand, they will be among the first 1,400 graduates of Cuba’s Latin American Medical School (ELAM). Many of them come from the Central American country’s significant indigenous communities, including a strong representation of young women. They began their studies with a bridging course and two years of basic sciences at the ELAM Havana campus. For nearly the
next four years, they studied with Cuban medical students, rotating through clinical specialties at teaching hospitals and policlinics, affiliated with 22 medical school campuses across the island.

Like the other international students at ELAM, their medical education has differed from the regular Cuban medical school curriculum in two ways: there is a greater emphasis on health problems and diseases characterizing the epidemiological picture in their home country and more in-depth courses in disaster management are offered.

However, in their last semester, Cuban and Guatemalan medical education authorities agreed to enroll 150 of the 187 in a pilot internship back in Guatemala under the guidance of Cuban professors, who are among the 294 physicians in the Cuban medical contingent serving in that country.

“We believe there is no substitute for clinical experience with the communities and patients that they will be treating a year from now,” emphasized Dr. Francisco Durán, Director of Higher Medical Education in Cuba’s Ministry of Public Health. He was on the Cuban assessment team dispatched to Guatemala this spring, which spent 10 days visiting the remote regions where the interns are posted with their Cuban mentors. “I was impressed,” he told MEDICC Review, “not only by the quality of the students’ clinical skills and their commitment, but also by the great potential we can already see in how well they communicate and relate to people in these communities - because they are the sons and daughters of these populations, and so they keenly perceive their problems and belong to the culture.”

“This pilot experience has also placed new demands on the Cuban physicians in Guatemala,” noted Dr. Juan Carrizo, who joined the team as Rector of ELAM. “They were providing services,” he said, “but now they are challenged to give more of themselves - to share their scientific, technical and pedagogical expertise with these students to help them complete their medical education. I think in the end, this experience adds an element that makes for a qualitatively superior education for these young people, an education more pertinent to their medical practice environment, reinforcing the competencies they will need the most.” He noted that pilot internships on a smaller scale were also organized this spring in Honduras, Haiti and Venezuela.

The Guatemalan student group at the Latin American Medical School - which numbered a total of 610 in the 2004-2005 academic year - is expected to grow for 2005-2006 despite the outgoing graduates, due to unprecedented first-year enrollment for the coming year. Some 50 scholarships were originally awarded by Cuba, but the number was nearly doubled with the inclusion of another 46 in May. William Sandoval, Human Resource Director of Guatemala’s Health Ministry, said his government was grateful for this additional cooperation, and called on students to take advantage of “this unique opportunity to become highly qualified (health) professionals.”

Central America has been the most strongly represented region in the ELAM student body, with over 650 Hondurans and another 500 Nicaraguans. Upwards of 240 more Nicaraguans begin their studies in the fall, with another 20 Hondurans as well.

Contrary to the receptivity of other governments, Honduras’ new Health Minister recently announced he was turning down another 25 scholarships, despite the fact that the local press reported that some 6,000 applications had been received. He argued that his government preferred to re-orient the offer towards training in the allied health professions such as laboratory and anesthesiology technicians. Total numbers in the ELAM program now surpass 10,000 from 27 countries, including students from 101 ethnic minorities (See MEDICC Review, Vol. VI, No. 1, 2004, Cuban Med Schools Open with Record Enrollment). Most students come from low-income families.

For the new school term, Guatemala and Cuba are pioneering another option to increase opportunities for qualifying students to take advantage of the Cuban scholarship program. Since ELAM dormitory space is now filled to capacity, an option for homestays with Cuban families is being offered to an additional 167 Guatemalan students for the duration of their medical studies. “The families will receive government assistance to provide students with fully adequate conditions,” commented Pablo Romero, of the Cuban Embassy in Guatemala City, adding that this group of students is expected to travel to Havana by mid-July.
For past issues, visit our archives at http://www.medicc.org

MEDICC Review
Health and Medical News of Cuba
Online Version

25th National Pediatrics Congress
and
First International Symposium on Neonatal and Pediatric Intensive Care
October 17-21, 2005
International Convention Center
Havana City, Cuba

For more information, please contact: Dr. Enso Dueñas or Dr. Fernando Dominguez,
Phone (537) 830-4489, 55-25-58 - fddieppa@infomed.sld.cu