

## Tropical pediatrics: 2002 to 2015

Perla D. Santos Ocampo, Cynthia Santos Ocampo-Padilla

Department of Pediatrics, University of the Philippines, College of Medicine, Philippine General Hospital, Manila

**SUMMARY:** Tropical pediatrics: 2002 to 2015. Turk J Pediatr 2003; 45: 181-191.

It also presents the challenges that confront children in the tropics and their effects on the health of these children. These challenges include the technology divide, economic disparity, ecological changes, urbanization and industrialization, globalization, political instability, population explosion, and gender inequality.

The paper paints a scenario of tropical pediatrics into the year 2015. Problems brought about by both underdevelopment and modernization, with urbanization and industrialization, will persist. Infectious diseases will continue to be the leading causes of deaths.

The paper presents some significant achievements in the fight against tropical diseases and tries to predict what future progress will contribute to the alleviation of such diseases.

The paper also outlines the commitment of the International Society of Tropical Pediatrics (ISTP) to improve the state of tropical pediatrics in the next 15 years.

*Key words:* tropical, pediatrics, tropical pediatrics, International Society of Tropical Pediatrics.

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*"The interests of childhood and youth are the interests of mankind"*  
Edmund Storer Janes

### The Scope of Tropical Pediatrics

The term "tropical pediatrics" has been a challenge notably from the point of view of what it encompasses. Literally, it means diseases of children which are found in tropical countries. Historically and geographically, these countries occupy the region between the Tropics of Cancer and Capricorn. Realistically, tropical diseases encountered are often caused or exacerbated by economic deprivation and neglect due to the state of development of these countries. Generally, most tropical countries are developing countries. Tropical Pediatrics may, therefore, refer to health and illnesses of children living in developing countries. Exceptions are however available. Singapore with its infant mortality rate of 4 and under-five mortality rate of 4/1,000 live births is a rare example. Malaysia is fast catching up with an infant mortality and under-mortality of 10

and 11/1,000 live births, respectively. Both of these countries are right in the center of what is considered the tropics and yet their state of development counteracts environmental factors which lead to tropical diseases.

However, tropical diseases have been found also in nontropical countries. Due to a number of factors, one of which is globalization (only one of such factors), with a free exchange of goods and services, there has also been an increase in mobility of people, vectors and microorganisms. Consequently, tropical diseases are by no means confined to tropical countries but can be found in developed temperate countries such as those of Europe and North America. Even Webster has included a definition of tropical diseases as follows "n: a disease that is indigenous to and may be endemic in a tropical area but may also occur in sporadic or epidemic form in a non-tropical area".

### The Urgency of Tropical Pediatrics

Why the urgency in focusing on Tropical Pediatrics? The impact of tropical pediatrics

on the health and development of nations and the entire world is tremendous. There is need to immediately confront these diseases as they impose a huge burden of illness which, globally, accounts for 10 to 12 million deaths in the under-five age group annually. Seventy five percent of all child visits to health facilities and seven out of 10 childhood deaths result from just five causes: pneumonia, diarrhea,

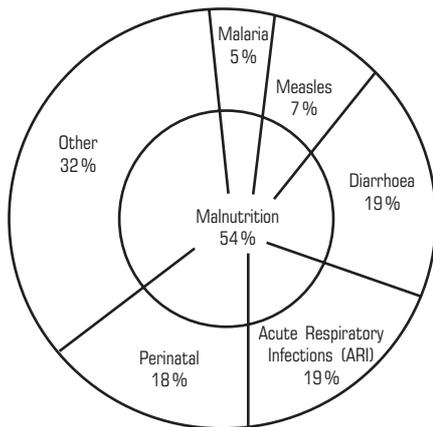


Fig. 1. Causes of 11.6 million deaths among children under five years old in all developing countries, 1995. From The Global Burden of Diseases, 1996, C. Murray (ed).

Although the care of children in the tropics is a daunting task for health care givers, it has been shown, by distinct examples in developed countries where improvement in social conditions have eradicated diseases, that combating these five apocalyptic causes result in a dramatic decrease in infant and under-five mortality rates.

Limited resources dictate that focus must be on the segment of the world's population where response to relevant but inexpensive interventions will affect a significant improvement in the health and development of these countries<sup>1</sup>.

The last part of the above statement strongly

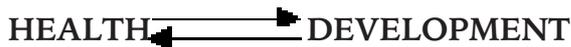


Fig. 2. The relationship between health and

implies the close relationship between health and human development (Fig. 2).

Overwhelming evidence has pointed out that the highest morbidity and mortality which occur in tropical countries is in the under-five

age group. And the nature of the causes of diseases and deaths in this age group are highly preventable and curable. This has been well demonstrated by examples of today's highly developed countries such as the United States of America, where control of infectious diseases decreased mortality rates and lengthened life expectancy as a result of improved health conditions, including hygiene and sanitation, personal and public health care and advances in medical science and technology (Fig. 3).

The effects of the above are also depicted in many aspects of human existence as in the gradual decrease in infant mortality through the past century in many countries of the developed world. These findings indicate the need to focus on tropical pediatrics, not only because of the seriousness of the problems but because

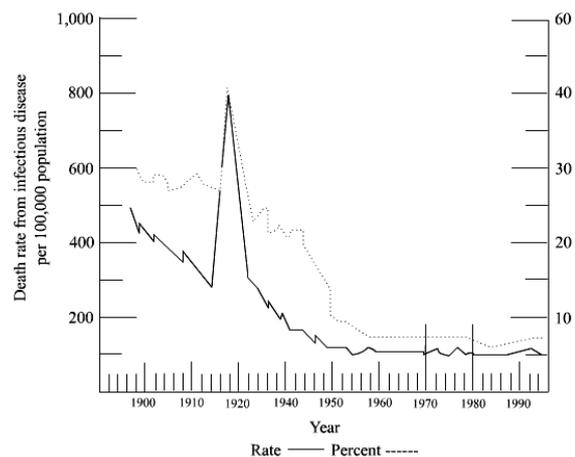


Fig. 3. Trends in infectious diseases mortality, 1900-1992

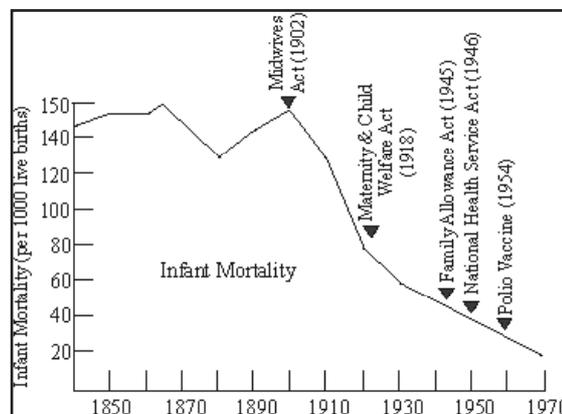


Fig. 4. The association between infant mortality and significant social legislation in England and Wales over the last 150 years (Modified form: Pediatric Practice in Developing Countries, G. Ebrahim 2<sup>nd</sup> edition. Reproduced with permission of Macmillan Education

their responsive nature to interventions, such as legislation (Fig. 4).

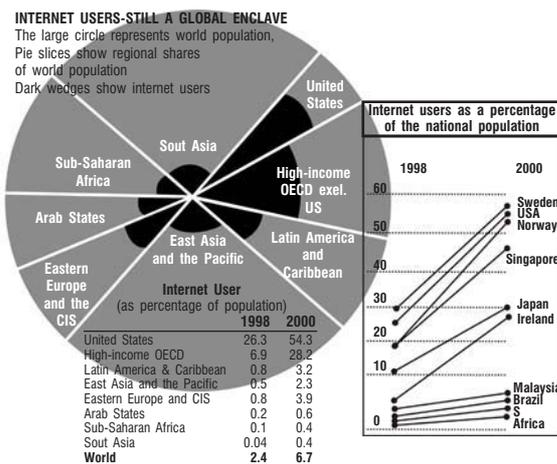
### Centennial Challenges in Tropical Pediatrics

Our challenge is to draw a map across this fast-changing terrain and decide on a path to traverse to arrive at our goal of better child health for children in the tropics. This journey can be very difficult but is an imperative. To do this, one must carefully look, anticipate and counteract what obstructions and dangers lie ahead, as did successful explorers of the past.

### The Technology, Digital and Other Divides

Never before has the world seen swifter advances in information and communications technology than what is encountered today. This is a time of new and rapid discoveries in technology. But one has to cope with the undesirable and uneven diffusion of information and communications technology. And while there is the bright promise of technology for the North this might be not only inappropriate for the South, but even result in the emergence of new problems.

These unequal opportunities for the network age has led to the digital divide which has become



Şekil 5. The digital divide within countries (Sources: The Human Development Report UNDP).

a serious concern. A technology achievement index has been introduced in the 2001 Human Development Report to present the status of the world's 162 countries in creating and

diffusing technology and in building human skills to master new innovations<sup>3</sup>. Figure 5 demonstrates the uneven diffusion.

New technology has definitely improved the quality of health of people and the health care systems, but relentlessly there is the increasing gap between the developed and developing countries, between the North and the South, between the “haves” and the “have nots”, between the rich and the poor. In health, this results in the affluent being able to access the best of health care, including sophisticated imaging diagnostic tests, and the poor pathetically unable to buy even necessary antibiotics for a life-threatening infection.

### The Economic Disparity/Lack of Political Will

In many developing countries, the gap between the rich and the poor continues to widen. Wealth is concentrated in the hands of a few, with as much as 60% of the population languishing below the poverty level.

Absolute poverty is defined in terms of a given level of income or consumption by defining a “poverty line” as the lowest amount of the money sufficient to purchase the amount of food necessary for a minimally adequate diet (with enough left over to buy other essentials). Almost a quarter of the world's population, or 1300 million people in China, Southeast Asia and sub Saharan Africa, mostly tropical countries, live below the poverty line<sup>4</sup>.

On the other hand, “relative poverty” seeks to define the national poverty line as some proportion, often arbitrary, determined of a society's average per capita income or expenditure. These concepts are now being reviewed and may emphasize health and

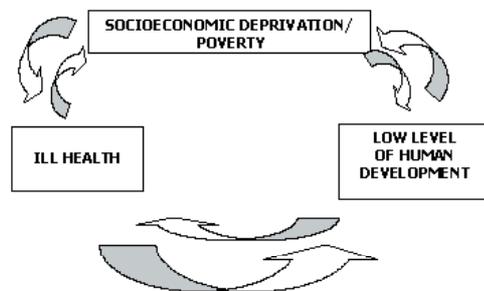


Fig. 6. The vicious cycle of poverty, socioeconomic deprivation/ill health and low level of human development.

education as part of the definitions.

The economic disparity leads to social inequity and worsens the oppressive poverty which brings about diseases such as tuberculosis, pneumonias, measles, diarrheal disorders, and malnutrition.

This time, the vicious cycle between socioeconomic factors, health and human development becomes quite clear (Fig. 6).

Shrinking monies have resulted in a financial volatility which will stretch every national currency to its limit to cover the expanding cost of health care. Undoubtedly, whatever funds are available for health care will buy less and less. This situation will sustain the existing inefficiency, inequity and inaccessibility of health care.

In addition to this, lack of political will in most countries leads to inadequate budgetary allocations for health, inefficient health organization and management, inappropriate and inadequate health manpower, and an ineffective health information system, all contributing to a high morbidity and mortality.

Jelliffe<sup>5</sup>, whom we highly esteem as a distinguished pioneer for Problems of Child Health in Subtropical and Tropical Countries of the World stressed in 1965 that these health problems are socioeconomic in nature.

In 1972, Golden<sup>6</sup> raised the question, "What is Tropical Pediatrics?". At that time he proposed that the world "tropical" must be put in its proper context; heat and humidity must be looked upon only as contributory elements to the multiplicity of disease causes. Even then, he advocated for more emphasis on the socioeconomic origins of illnesses and on the relationships between culture, poverty, social status, education and health<sup>6</sup>. Thirty-seven years later, our very own Phil Fischer<sup>7</sup> defines Tropical Pediatrics as "often more of a study of the consequences of poverty than of exotic infections.

### Ecological Changes

Ecological changes such as degradation of the environment, urbanization, and industrialization have resulted in a deterioration of basic hygiene and sanitation and has led to illnesses due to environmental pollution.

Well documented is the ozone depletion and its contribution to dermatologic disorders including cancer of the skin<sup>8</sup>.

Not to be ignored is the effect of climate change on forests and the desertification of some parts of our planet. With this comes agricultural difficulties which affect nutrition due to a decrease in the carrying capacity of the planet in food security and availability and consequent famine. The El Niña phenomena are dreaded for the calamities and catastrophes they bring about, including floods and droughts.

Another serious concern with climate change is global warming, which leads to the breaking up of communities of plants and animals, especially insects. Together with this is the formation of habitats where vectors such as insects, flies and mosquitoes, and rodents have found havens for rapid multiplication, bringing about a disastrous resurgence in diseases which were heretofore considered under control. Dengue fever is a tragic example of this development. And with dengue, a host of other killer microorganisms which are vector-borne have reemerged. Tick-borne diseases are now found in larger areas of the world an extension of the territorial range of ticks.

To stress the substantial effects of climate change on health of children, let me quote from the 1997 Declaration of the Environmental Leaders of the Eight on Children's Environmental Health<sup>9</sup>.

*"Our children and future generations face serious threats to their health and welfare from changes in the Earth's climate due to a build-up of greenhouse gases in the atmosphere. Overwhelming scientific evidence links human actions to anticipated changes that are likely to result in unacceptable impacts to all nations... Children will be the most susceptible to more severe heat waves, more intense air pollution*

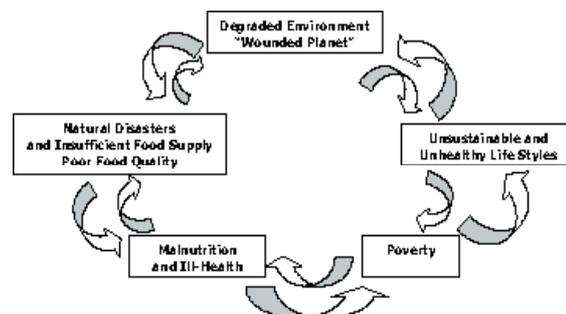


Fig. 7. The vicious cycle of a degraded environment and ill health.

and the spread of infectious diseases, and the interactions between these issues and other global trends, such as ozone depletion, are only beginning to be understood. Future generations will face many potential health impacts of climate change with serious health, environmental and economic consequences”.

**Changing Habits, Changing Climate  
1997**

Here we can see yet another vicious cycle, that of a degraded environment leading to natural disasters, insufficient food supply, malnutrition, pollution, ill health, poverty and unsustainable and unhealthy life styles (Fig. 7).

Rising levels of pollution and environmental degradation have been associated with infections, respiratory ailments, diarrheal disorders, congenital malformations, cancers, poisonings and injuries.

Dr. Albert Schweitzer has given us this warning:

*“Man has lost the capacity to foresee and to forestall.  
He will end by destroying the earth”.*

### Urbanization

Urbanization under the guise of modernization has brought with it both advantages and disadvantages. As it may lead to environmental degradation when uncontrolled, it is mentioned at this point. In developing countries, the flight into the cities has resulted in urban blight, as witnessed by slums where families live on the sidewalks, in carts, in cardboard hovels, along perilous river banks and railroad tracks, and under extremely unhygienic, unsanitary and crowded situations, imposing a heavy load on already inadequate social, environmental and educational services. Much has been said about the deleterious effects on children of environmental degradation. In urban slums, environmental risks continue to emerge and worsen, resulting in intensified exposure to accidents, injuries, lead, dioxins and other pollutants and disease-causing microorganisms.

Urbanization also leads to pervasive breakdown in traditional family life, values and culture, creating a deleterious effect on the child's survival and development. Swiftly disappearing is the extended family of yesteryears which

provided much support to children exposed to parental problems and counteracted the detrimental effects of dysfunctional nuclear families. There is now an alarming change in the sociology of the family characterized by single parent or no parent households. Parents have to work a way from the home to eke out a living. The definition of a nuclear family has been rapidly changing. In a musical, *Falsettos*, the nuclear family includes a gay lover of the father.

Easier access to pernicious media, especially television violence lewd shows and pornographic printed material, has exposed both adults and children to detrimental stimuli which foster violence, abuse, adolescent sexual health problems, perversions, tobacco smoking and dietary fads.

### Globalization

Mobility results in swifter means of travel which facilitates not only the movement of people, but also the spread of bacteria, viruses and vectors of disease and psychoactive drugs. Urban malaria has been noted in India and Airport Malaria has been reported in Europe.

A recent example of the globalization of infections is dengue fever. It has also become a great leveler and all socioeconomic classes can be affected. In 1985, *A. albopictus* arrived in the United States through a shipment of water-logged tires sent from Japan for retreading in Houston, Texas.

Let me give you the present status of dengue infection by paraphrasing from a lay publication (Newsweek) entitled “The Bug is Back”. The title itself can apply to other situations such as malaria, tuberculosis, etc. “The resurgence of a number of infections, heretofore believed to be under control, attributable to a multiplicity of factors is being observed in many parts of the world. In the 1970's, the war against a number of infectious diseases was considered ‘won’ what with massive vaccination programs, especially against smallpox, polio and yellow fever, the discovery of new potent antibiotics and effective campaigns against disease vectors, especially insects and rodents”.

“In 1914, President Theodore Roosevelt as he journeyed through the Amazon rainforest was

more impressed with the insects rather than with the big man-eating animals. He wrote that 'the multitude of insects that bite, sting, devour and prey upon other creatures, often with accompaniments of atrocious suffering... passes belief'".

Dengue is a perfect example of a tropical infection which afflicts both poor and rich alike. Although initially, it might affect urban slum dwellers, the affluent are not immune to the bites of *Aedes aegypti*. Dengue is now endemic in 100 countries. Believed to be a disease of resource-poor countries, dengue research has not been a priority. In contrast to AIDS, which gets huge amounts in research funds, dengue has only US \$5 million<sup>10</sup>.

To combat the disease, there are pioneering efforts to produce a tetravalent vaccine and transgenic *Aedes aegypti* mosquitoes whose immune system is protected against the virus by virus-destroying genes from mice. These are predicted to be about 10 years away but may be available by the target date of 2015.

An example of an infection which is also considered a major global threat is HIV/AIDS which has become a major problem in Africa, Asia and Latin America. The risk of orphanhood due to AIDS is reaching terrifying magnitudes. By 2010, it is predicted that 40 million children in Africa and Latin America will have lost one or both parents due to the pandemic. These children, deprived of parental support and care will eventually be forced into the streets, into child labor, deprived of a nurturing home and schooling, and they may eventually succumb to HIV/AIDS themselves.

The global village has also led to a borderless world which has facilitated the acquisition of external cultural norms and lifestyles which challenge the integrity of native cultures and traditions, and can lead to anomie.

### Political Instability, Wars and Hostilities

The unmitigated political strife prevailing in many developing countries has definitely aggravated population movements with consequent ill effects on communities. Continuing wars and hostilities, many of them arising from ethnic conflicts within the borders of countries in many parts of the world, have threatened the survival of these very countries and perpetuated the sad plight

of children caught in the crossfire and violence, resulting in displacement from families; loss of parents; injuries, both physical and psychological; and death. The loss of social support among displaced families often as a result of war or political conflict and natural catastrophes, take a tremendous toll on the well being of our children. Displacement and economic losses put a lot of stress on the capacity of the family to care for children. Political instability disables families from performing the basic role of care giving. Rapid population movements stretch the available community support to the limit and render traditions, which are constant sources of coping for communities, incapable of providing such support.

### The Demographic Earthquake

In most developing countries, a runaway population explosion has posed a major problem, which has as its tragic effects, diminution and deterioration of services, including those for education, health, and social and basic commodities such as food, water and sources of energy<sup>11</sup>.

This demographic earthquake that continues to bring us shivers can be caused either by a high birth rate or massive migration, such as that prompted by refugees of war or of famine, and the lengthening life-span of the elderly as a consequence of the improvement in quality of life and advances in modern medicine.

### The Gender Gap

Although the gender gap has been narrowing for the past 20 years since several international initiatives, this has been progressing too slowly. In spite of modern-age science and technology, and knowledge and information, harmful traditional practices of the past affecting children

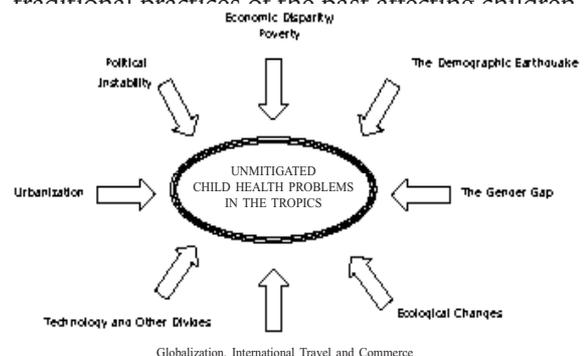


Fig. 8. The centennial challenges Determinants of Child Health in the Tropics 2002.

continue to persist. Girl children are particularly affected. Among these horrendous practices are feticide, infanticide, female genital mutilation and unequal access to health care, psychosocial stimulation and educational opportunities. Girl children are expected to do more domestic work and are forced either into early marriages and pregnancies or prostitution, and are used as payment for debts and to carry the burden of punishment for their fathers and brothers. All these lead to frequent illnesses, poor growth

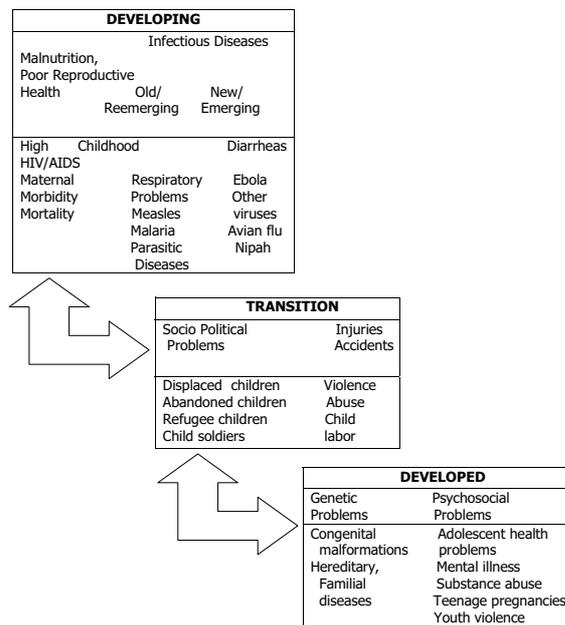


Fig. 9. The epidemiologic transition.

Undoubtedly, the global burden of diseases will continue to be mostly concentrated in the tropics, with infectious diseases as the leading causes of deaths. Of 52 million deaths worldwide, 17 million, or one out of three, will be caused by infectious diseases.

Although not confined to the tropics, both emerging and reemerging infections will play significant roles. Emerging infections are those which have appeared in a population within the past two decades or threaten to increase in the near future, while reemerging infections are caused by known microorganisms that were once under control but are now rapidly increasing in incidence or geographic range. Annual figures in the tropics show that:

>1 million children die of malaria in sub-Saharan Africa

~200 million people have schistosomiasis  
~35 to 60 million people contract dengue

Even in the United States of America, about 25% of physician visits are due to infectious diseases, and this estimated to amount to greater than \$120 billion in direct and indirect costs.

Definitely, there is a resurgence in tuberculosis. Cholera has been found in refugee camps in Africa, and diphtheria and pertussis outbreaks have occurred in countries where these have presumably been under control. Microbial adaptation and change resulting from a microbial evolution and a response to selection pressures in the environment may lead to e.g., antibiotic resistance in bacteria and an antigenic drift in viruses such as influenza<sup>12</sup>.

In the non-communicable disease area, health problems emanate mainly from violations of children’s rights. As we listen through the program we have for the next four information-laden days, we will note that most of these problems arise from “broken promises” related to the 1990 World Summit for Children, especially in Asia and Africa.

### Confronting the Challenges

Clearly, the centennial challenges or determinants of ill health in the Tropics are multifactorial.

Members of the International Society of Tropical Pediatrics are committed to helping the child in the tropics in their respective countries, but they are too few. Our ranks will have to be reinforced and advocacy and awareness, involvement and commitment for Tropical Pediatrics must be increased. Training programs, educational materials and conferences devoted to Tropical Pediatrics have to be encouraged.

It is heartening to note that there are significant training programs devoted to tropical medicine/pediatrics. These are located mainly in the United Kingdom, the United States, India and Thailand. Publications such as books and journals are in existence but rare. Examples are the Journal of Tropical Pediatrics<sup>13</sup> and Annals of Tropical Pediatrics. There are also very few books dedicated to Tropical Pediatrics.

The International Society of Tropical Pediatrics has been holding triennial congresses since 1987.

#### First-Bangkok, Thailand, 1987

Professor Prasong Tuchinda, President  
Professor Tan Chongsuphajaisiddhi,

Secretary-General

**Second-Nairobi, Kenya, 1990**

Professor Nimrod O Bwibo, President  
Dr. G. M. Anabwani, Secretary-General

**Third-Luxor, Egypt, 1993**

Professor Hussein K. Bahaa-El Din,  
President

Professor Ahmed M. Eissa, Secretary-General

**Fourth-Kuala Lumpur, Malaysia, 1996**

Professor Mohd Sham Kasim, President  
Professor Hoe Tuck Sang, Secretary-General

**Fifth-Jaipur, India, 1999**

Dr. Uday Bodhankar, President  
Dr. Ashok Gupta, Secretary-General

**Sixth-Ankara, Turkey, 2002**

Professor Ihsan Dogramaci, President  
Drs. Turgay Coskun and  
Murat Yurdakok, Secretaries-General

It is inspiring to note that the International Children's Center, under the leadership of Professor Ihsan Dogramaci, Honorary President of the International Pediatric Association (IPA), has adopted the cause of children in the tropics by hosting this International Congress of Tropical Pediatrics.

Among the international initiatives which aim to narrow the gender gap and which also aim to protect children in general are the following:

*The Geneva Declaration of The Rights of the Child, 1954*

*The Universal Declaration on The Rights of the Child, 1959*

*The International Covenant on Civil and Political Rights, 1966*

*The UN Convention on the Elimination of All Forms of Discrimination Against Women, 1979*

*The Convention on the Rights of the Child, 20 November 1989*

*The World Summit for Children, 29-30 September 1990*

*The World Conference on Education for All, 1990*

*The International Conference on Nutrition, 1992*

*The International Conference on Population and Development, 1994*

*The Fourth World Conference on Women, 1995*

*Say Yes to Children, 2001*

**Achieving The Mission**

In a paper entitled "Better Childhood in the Next Millennium", which was presented in Kirgystan three years ago, where some of you were in attendance, I outlined some strategies under the heading "Achieving the Mission"<sup>14</sup>.

Surprisingly, some items are as relevant today as they were then. Let me quote from the subtitles of the paper:

• Adoption of International Initiatives Oriented Towards Better Child Health

♦ Continued Implementation of the Alma Ata Declaration of 12 September 1978

♦ Enforcement of the Convention on the Rights of the Child

• Development and Maintenance of Dynamic and Effective Health Systems

• Sustained Data Collection, Monitoring and Evaluation

• Better Education, Literacy

• Support for Advocacy, Political Commitment and Family and Community Participation

• Enhancement of Networking, Linkages, Partnerships

• Strengthening Capacities of Training Institutions to Reorient Curricula to Meet Changing Needs

• Harnessing Information and Communications Technology

• Fostering Research and Development

• Support for Both the Molecular and Social Sciences

• Sustaining the Environment

**Inspiring Achievements**

Snippets of Achievement, published by the UNDP/World Bank/WHO in 2001, listed 17 examples of success in research and training in tropical diseases during the past 25 years<sup>15</sup>. The subtitle, very apt, is "the past illuminating the future..." Some of these are:

1. New basic knowledge about

- ♦ Onchocercal skin disease
- ♦ Transformation of a mosquito
- ♦ Parasite genome

2. New and improved tools in infectious disease prevention and control

- ♦ Multi-drug therapy for leprosy
- ♦ Road mapping for onchocerciasis

- ♦ New drugs and vaccines
- 3. New and improved intervention methods
  - ♦ Vector control for Chagas disease
  - ♦ Unit dose packaging of antimalarials

These are a few of the output of the Special Program for Research and Training in Tropical Diseases (IDR).

And there are many other recent achievements we can name such as:

- ❖ The Human Genome Project
- ❖ Improved cancer diagnosis
- ❖ Promising pharmaceuticals
- ❖ Information and communication technology
- ❖ Portable information devices
- ❖ Computerized health care
- ❖ Networking and partnerships

#### Accelerating The Momentum

Leadership is the focus of UNICEF's *The State of the World's Children, 2002*<sup>16</sup> and I believe that members of the International Society of Tropical Pediatrics (ISTP), pediatricians and leaders in their respective countries continue to be committed to the cause of children in the tropics. As our African leaders state:

*"The future of our children lies in leadership and the choices leaders make".*

*Grada Machel and Nelson Mandela  
The Global Movement for Children*

This prompted me to ask leaders (Members of the Advisory Council of ISTP) what they were thinking about Tropical Pediatrics today and in the year 2015. The latter year has been set as a logical date to accomplish certain goals which can contribute to better child health in the tropics. Because of the urgency of accomplishing goals within a generation (every day, children die or are crippled!), the target date of 2015 has been suggested by most agencies and institutions. UNICEF has set an earlier date of 2010 for its goals (The State of the World's Children 2002).

Among those who sent in their invaluable inputs were: Drs Hassan Badrek-Amoudi, Uday Bodhankar, and Phil Fischer. Their precious thoughts were collated and incorporated in a draft Vision/Mission Statement for ISTP which I am presenting for comments before this is finalized by the membership to be utilized in the formulation of programs/strategies to

improve health of children in the tropics.

#### Vision and Mission Statement of ISTP

**Vision:** The ISTP, founded in 1986, continues to stand today with a firm resolve to faithfully pursue its vision to improve the health of children in the tropics.

**Mission:** We, the chapters and members of the International Society of Tropical Pediatrics, aim to work towards bringing to children in the tropics, the blessings of good health and a better quality of life.

We of ISTP Believe...

- ❖ In the improvement of health care of children in the tropics to attain a better future for mankind.
- ❖ In enhancing greater relevance through continuing surveillance of tropical childhood morbidity and mortality.
- ❖ In vigilance against the emergence of new morbidities and those that have reemerged afflicting children in the tropics.
- ❖ In fostering the search for knowledge, especially for the prevention, diagnosis and treatment of diseases peculiar to the tropics, such as the development of better vaccines and therapeutic agents.
- ❖ In the application of new appropriate knowledge, procedures, skills and medical equipment and products to local conditions through scientific meetings, congresses, and workshops to improve health care of children in the tropics.
- ❖ In strengthening the family to recognize and cope with health needs, emphasizing the promotive and preventive aspects.
- ❖ In empowering the community to provide a child-friendly environment including sustainable and integrated gender-sensitive health, educational and social services.
- ❖ In capacity building and networking at the local level to address health problems of children in the tropics.
- ❖ In stronger collaboration with one another in time of disasters, emergencies, and epidemics.
- ❖ In taking a dynamic role in child advocacy and in the enforcement of the Convention on the Rights of the Child and other international and national statutes enhancing the status of

children.

❖ In providing avenues for relevant education and training for pediatricians and other child health care givers for the benefit of children in the tropics.

❖ In more vigorous multisectoral and global partnerships with implementing agencies such as the World Health Organization (WHO), United Nations Children's Fund (UNICEF), and the International Pediatric Association (IPA), national governments and child-caring voluntary organizations for better child health care.

❖ In participating in initiatives to alleviate conditions inimical to better child health in the tropics such as poverty, and inequities in availability of health care, education, and other services.

❖ In nurturing within ourselves compassion and courage to move us to action; humility and kindness to put interests of children as a priority; patience and perseverance to continue to transform our vision into reality; and hope and dedication to sustain our mission: *the betterment of health care for children in the tropics*.

To build on earlier gains, we looked at the Human Development Report 2001<sup>3</sup>. Of particular importance are the Millennium Declaration Goals. These are presented in the next table. Table I tells us how people of the world are doing relative to the attainment of goals for 2015 in percentage of the world's population. Targeting the Millennium Declaration Goals will in effect focus on strategies which will ameliorate the plight of children in the tropics.

In these coming years, important medical advances will appear almost daily<sup>17</sup>. It is estimated that medical knowledge will double every eight years. There is so much predicted in the medical field<sup>18</sup>. The following listing is limited to those that might mitigate health problems of children in the tropics.

❖ Computer chips with genes for mastery of the human proteome

❖ More applications of gene therapy

❖ Food security through improved agricultural methods, therapeutic foods and alternative energy sources

❖ Better vaccines, pharmaceuticals and diagnostics

❖ Production of artificial blood

Table I. Millennium Declaration Goals: How Are People Doing?  
(Percentage of World Population)

Goal (for 2015)	Achieved or on track	Lagging, far behind or slipping	No data
<b>Gender equality</b>			
Eliminate disparity in primary education	58	5	22
Eliminate disparity in secondary education	42	22	21
<b>Infant and child mortality</b>			
Reduce infant mortality rates by two-thirds <sup>b</sup>	23	62	(.)
Reduce under-five mortality rates by two-thirds	23	62	(.)
<b>Maternal mortality</b>			
Reduce maternal mortality ratios by three-quarters	37	48	(.)
<b>Basic amenities</b>			
Halve the proportion of people without access to safe water	12	70	3
<b>Hunger</b>			
Halve the proportion of people suffering from hunger	62	11	12
<b>Universal education</b>			
Enroll all children in primary school	34	5	46
Achieve universal completion of primary schooling	26	13	46
<b>Extreme income poverty</b>			
Halve the proportion of people living in extreme poverty	54	23	8

Source: FAO 2000b; UNICEF 2001c; World Bank 2000c, 2001h; UNESCO 2000b; UNFPA 2001; UNAIDS 1998, 2000b; IMF, OECD, UN and World Bank; Hanmer, Healey and Naschold 2000 (modified).

John Ruskin, a century ago, stated:

*"I hold it indisputable that the first duty of a State is to see to it that the first born therein shall be well housed, clothed, fed and educated".*

And I believe that this is what we all would like to happen not only for the first born but for all children.

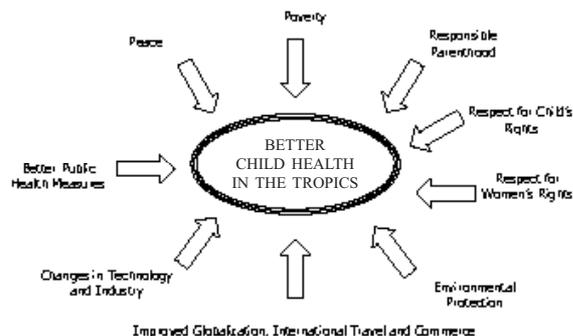


Fig. 10. The centennial opportunities Determinants of Child Health in the Tropics 2015.

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