# Special Artical

# The 7th International conference on Thalassemia and Hemoglobinopathies, The 9th Thalassemia Parent and Thalassemics International Conference, May 31 - June 4, 1999, Bangkok, Thailand "Concluding Remarks"

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In this conference 272 papers were presented and it was attended by 958 participants from 46 countries across the continents, representing collaborations beyond national, ethnic and religious boundaries, with one common goal - the benefit of mankind. The spirit of working together and friendship were high. The international thalassemia community has been built. Thus the International Conferences on Thalassemia are not only for scientific and technological exchanges, but the ideal of working together and the compassion to serve humanity make these activities spiritual development at the same time. The world will not do with just materialistic progress without spiritual development. Let our work in Thalassemia expand our consciousness and elevate our spirit for a better world in the century to come.

Although any one of us may have worked in any particular fields, it will be very useful to have an integrated view of thalassemia. There are 7 interactive spheres in the composite picture of thalassemia, represented by the following letters (see Fig 1 and Fig 2)

GPCESTP

This septuplet "thalassemia spheron" is decoded as

G = Gene sphere
P = Pathophysiology sphere
C = Clinical sphere
E = Environmental sphere
S = Social sphere
T = Treatment sphere
P = Prevention sphere

Although the etiology begins with G, the suffering starts with C or clinical symptoms. It may be argued between Treatment and Prevention which one is more important; both are. The sequences of the letters are interchangeable, depending on the need and new knowledge.

The subjects presented and discussed in this

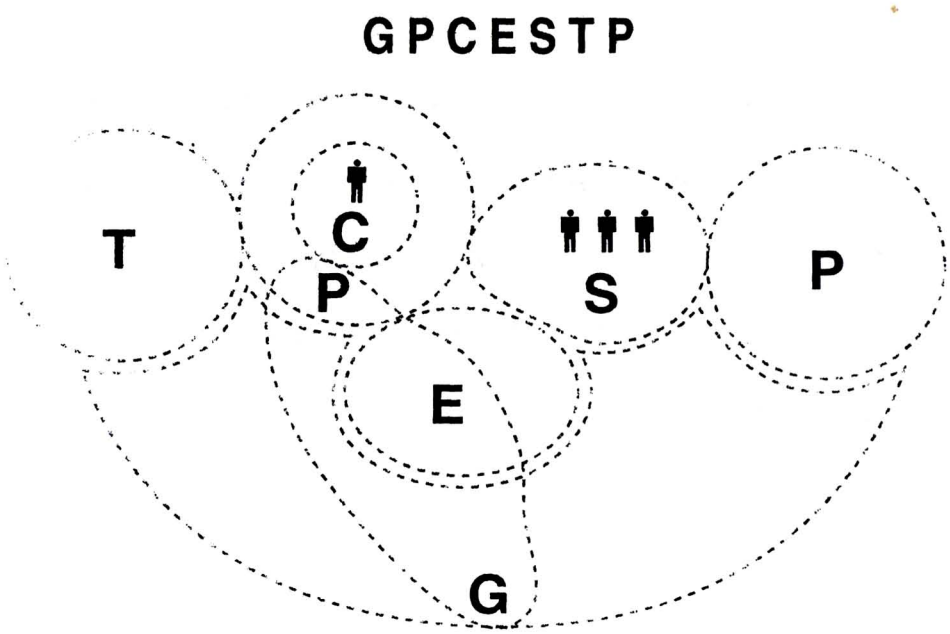
GPCESTP
T
C
P
S
P
E
G

Fig. 1

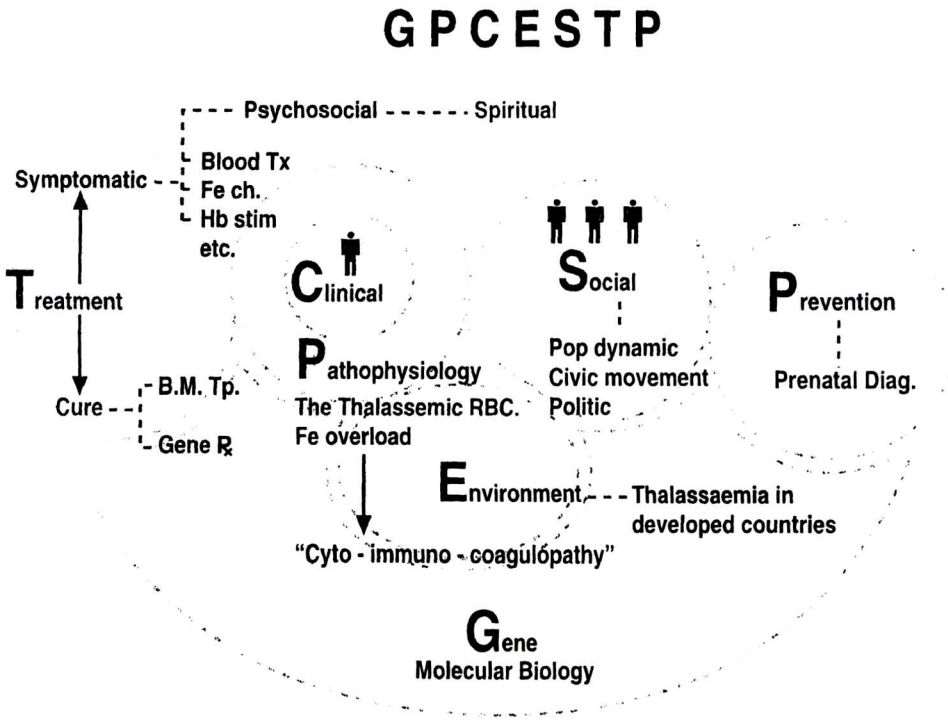
GPCESTP
Psychosocial
Spiritual
Symptomatic
Blood Tx
Fe ch.
Hb stim
etc.
Treatment
Cure
B.M. Tp.
Gene Rx
Clinical
Pathophysiology
The Thalassemic RBC.
Fe overload
Social
Pop dynamic
Civic movement
Politic
Prevention
Prenatal Diag.
Environment
Thalassaemia in
developed countries
"Cyto - immuno - coagulopathy"
Gene
Molecular Biology

Fig. 2

conference covered all the 7 thalassemia spheres which can be summarised and recommended as follows:

**Molecular biology:**

Rapidly advanced researches in molecular biology of thalassemia were presented. The dynamics of β-globin gene switch involving LCR, molecular biology of α-thalassemia and the regulatory function of the HS-40 region, the genotype-phenotype correlation, the thalassaemia patterns found in many parts of the world, and the experimental works in animals on gene transfer and gene expression were presented. Gene therapy, although not yet clinically applicable, with rapid advancement of research is a future hope. Although advanced works in molecular biology have been carried out in developed countries, basic capability should be developed in developing countries for the understanding of the clonical phenotypes, for prenatal diagnosis and for gene therapy to come in the future.

**Clinico-pathophysiology:**

Clinico-pathophysiology featured prominently in this Conference, unlike many conferences on thalassemia. This is appropriate because, although many thalassemias occur simply from one base mutation, the consequences leading to pathophysiology and clinical manifestation are very tortuous and complex, most of which are still not understood. Every organ can be affected and can be traced to the effects of anemia and iron overload. But why the pulmonary hypertension, the pulmonary artery occlusion, the hypoxemia, the autoimmune phenomenon? The works on the thalassemia red cell - the role of the intra-erythrocytic excess globin chains, the oxidative stress, the iron in the membrane, the membrane damage, the exposure of new antigen on RBC surface and RBC vesiculation, activation of the autoimmune mechanism and coagulation, have pointed to a very complex phenomenon which may be called "cyto-immuno-coagulopathy", associated with many clinical manifestations. There is a need for more research into this area; new disease mechanisms will be discovered and the new knowledge is necessary for better treatment and prevention of certain complications like pulmonary artery occlusion and pulmonary hypertension.

In overall picture good clinico-pathologic and pathophysiologic studies are still very much lacking, far behind molecular biology. This is part of the inherent weakness of clinical research everywhere which needs to be mended. For clinical research is at the crossroads between patient care, basic science and education.

**Environment:**

Patients with apparently the same thalassemic diseases differ so much in severity. It is important to understand determinants of different severity. For the phenotype variability not all can be explained by the genotypes. Environment may play some part, but we know very little about this. Infections play important roles in morbidity and mortality of thalassemia and they need to be better understood. Now with a

great number of people from thalassemia rich countries emigrating to developed countries, it is an opportunity to study the effects of different environments. Future conferences should try to include studies on comparison of patients in different social environments.

**Social aspect:**

This includes prevalence of thalassemia in populations and population dynamics. We learned from country reports the great burden of thalassemia in different parts of the world, leading to suffering, decreased quality of life, loss of lives and economic loss. In spite of this in most developing countries thalassemia is still not a national agenda. There is a need for policy movement. The International Thalassemia Community can play important roles in policy advocacy. WHO, TIF, the World Bank and the thalassemia community working together should be able to affect policies either nationally or in regional blocks like ASEAN, South Asia, the Middle East and Africa for examples.

It is noted with gratification that civic movement in term of thalassemia foundations and thalassemia societies in different countries have played increasing important roles. Community strengthening should be very crucial for the well-bing of the patients and families as well as for control.

**Treatment:**

Patients everywhere require treatment. This can be for cure and for symptomatic treatment. Bone marrow or rather stem cell transplantation works and the safety is increased. But it is still available to small numbers of patients. Economically it is cheaper than having to transfuse and chelate patients for life. Gene therapy is not yet available in man but should be possible in the future.

Psycho-social care, blood transfusion, iron chelation, Hb F stimulation with hydroxyurea, erythropoietin or butyrate are important and can increase the quality of life. All of these need continuous research to improve or to find new knowledge and new methods. The controversial toxicity of L1 is still not settled. Its use should be coupled with careful study; low doses of L1 may reduce its toxicity, and, although cannot remove the big amount of iron deposition, may be beneficiary though its removal of free iron. This needs further research.

The psycho-social dimension should receive more attention covering both the individuals and the social aspects. Spiritual well being, now added to the WHO definition of health, should be additional area to improve well being of the thalassemics.

**Prevention:**

Cyprus, Sardinia and Greece have pioneered the good work on control through prenatal diagnosis. It is noted with gratification in this Conference that many more countries now have control programmes, particularly India, Pakistan and Maldives. It is generally believed that in Muslim countries control programmes are not allowed, but Dr Yasmin Raashid from Pakistan said that the problem was not religion but some-

thing else. It has been noted the prominent role of women for thalassemia control, beginning with Bernadette Modell. Perhaps the caring, the protecting and the compassion in the woman nature makes our better half doing better in thalassemia prevention. Continued research and a forum for exchanges and updating methodology will help improving the success. Advancement in molecular biology is always beneficial to prenatal diagnosis.

**Integration into one wholeness:**

The above is an attempt to integrate the so diverse fields of work in thalassemia into one wholeness. When parts are integrated into the whole, new quality emerges. Just tryfor yourselves. When you appreciate these 7 thalassemia interacting to make the whole, your feeling is not the same as when you were compartmentalised in the parts. You feel more free, more happy and stronger. That is the spiritual dimension emerging out of wholeness. With this you will discover that working in thalassemia can be a spiritual development. That is the highest human development. The highest human development occurs when one transcends self and does for the betterness of others.

**Never retire from serving humanity:**

After the end of this Conference it is time to part. People were talking about who is retiring when: David Weatherall retiring in one year, Antonio Cao in two years, etc. Official retirement is artificial. The truth is that we can never retire from serving humanity.