

Global Programmes for the Control of Haemoglobinopathies

Consultation Meeting for the Prevention & Clinical Management of Thalassaemia
25 – 26 April 2018
Nicosia, Cyprus

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2030 UN NEW AGENDA

Sustainable Development



Eradication of Poverty

Nine (9) **Global NCD Targets**

One-third reduction in **premature mortality** from NCDs* by 2030

Achieving **universal health coverage** (UHC)

Providing access to affordable **essential medicines** and **vaccines** for NCDs

By **2016**, reduce risk factors for NCDs, building on guidance set out in the WHO Global NCD Action Plan

By **2016**, strengthen health systems to address NCDs through people-centered primary health care and universal health coverage, building on guidance set out in WHO Global NCD Action Plan (2013-2020)

*Probability of dying from any of the diseases in the major four categories of NCDs (cancer, cardiovascular diseases, diabetes and chronic obstructive pulmonary disease) between the ages of 30 and 70

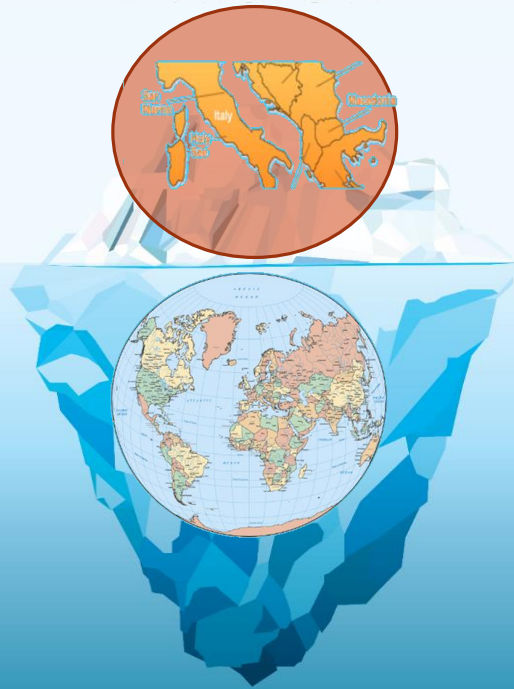
2030 Agenda for Sustainable Development: Targets for 2030



Commits governments to develop national responses:

- **Target 3.4:** By 2030, reduce by one third premature mortality from **NCDs** through prevention and treatment and promote mental health and wellbeing
- Target 3.5: Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
- **Target 3.8:** Achieve **universal health coverage (UHC)** including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

1925 – 1960: The tip of the Iceberg



THE DISEASE

Description of the medical condition:

...1925...

USA

Thomas Benton Cooley/ Pearl Lee (USA Paediatricians) describe:

The clinical characteristics of a *then unknown* disease affecting "migrant" children (of Italian mainly origin):

- Severe anaemia – main characteristics, hence the name
- Skull and bone deformities
- Organomegaly
- Poor growth and development

Early death - a fatal childhood disease

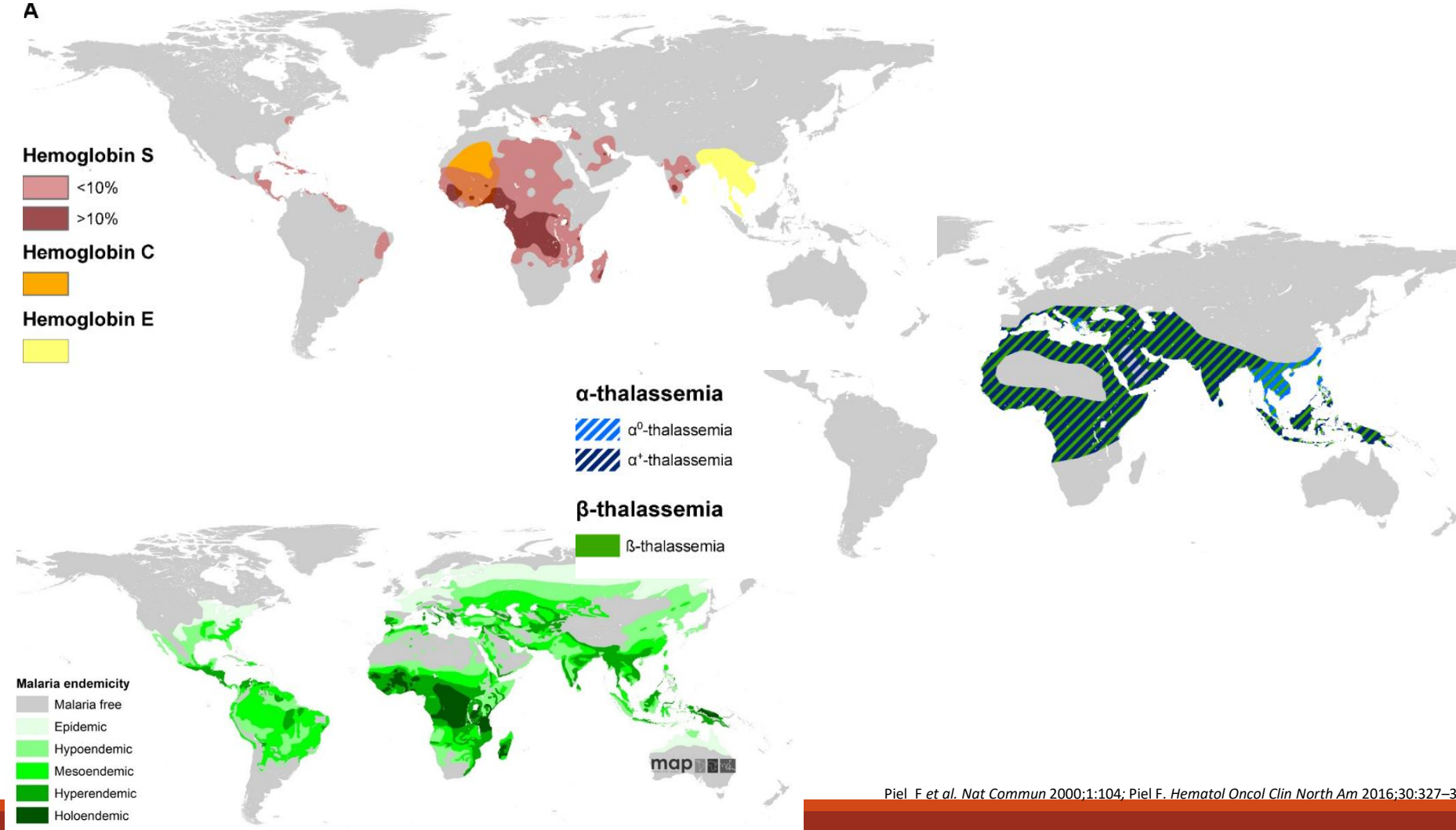


Images taken from: The thalassaemia Syndromes, D.J Weatherall, J.B. Clegg



Global distribution and the malaria hypothesis

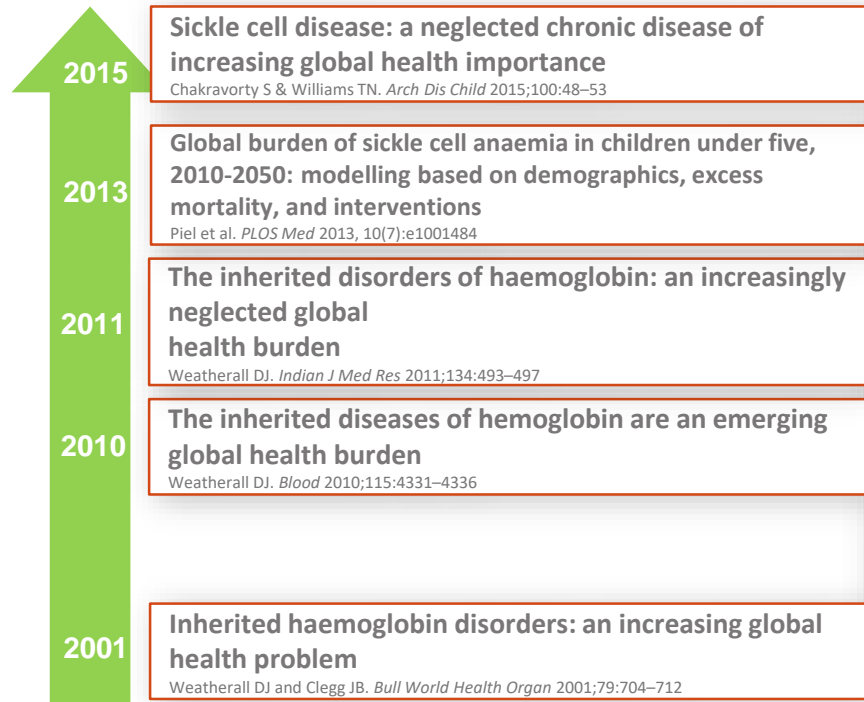
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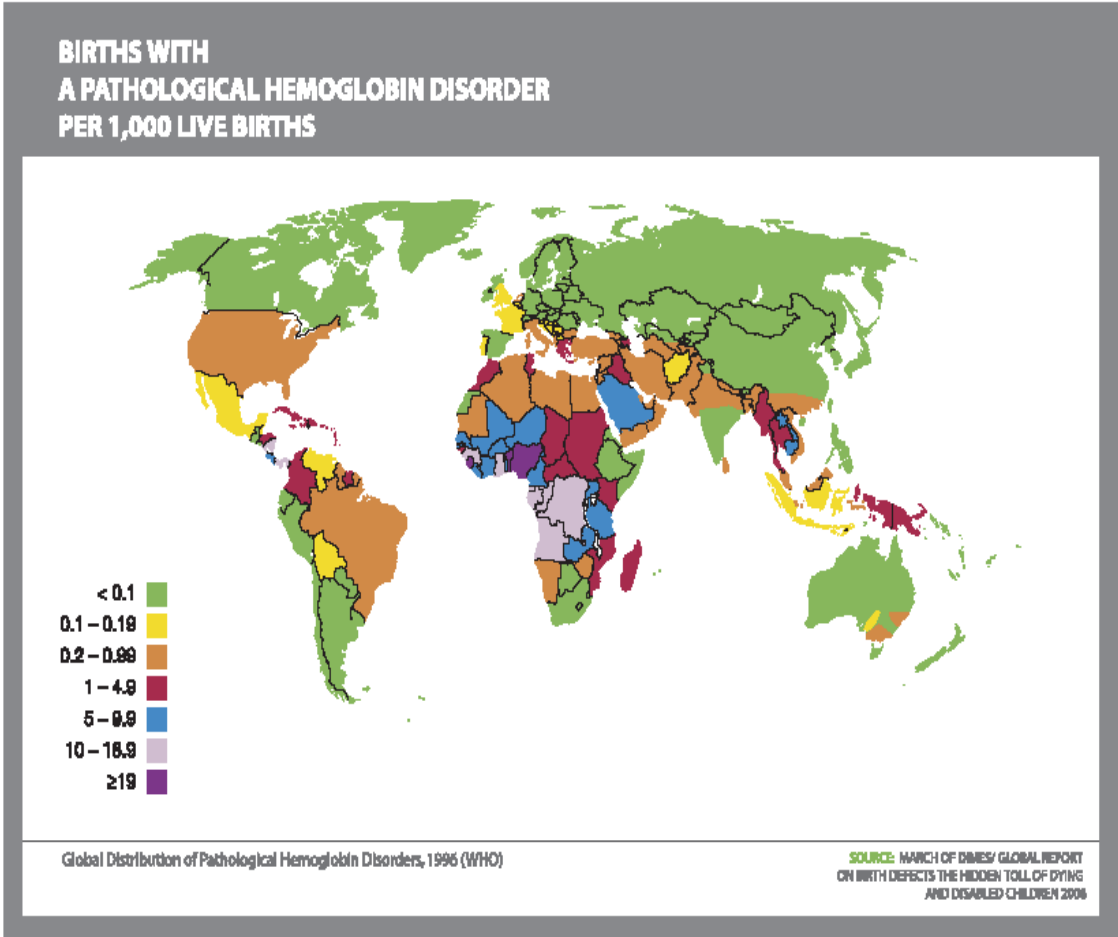
Piel F *et al. Nat Commun* 2000;1:104; Piel F. *Hematol Oncol Clin North Am* 2016;30:327–341

Global Human Population Movement

Inherited haemoglobin disorders: An increasing global health burden

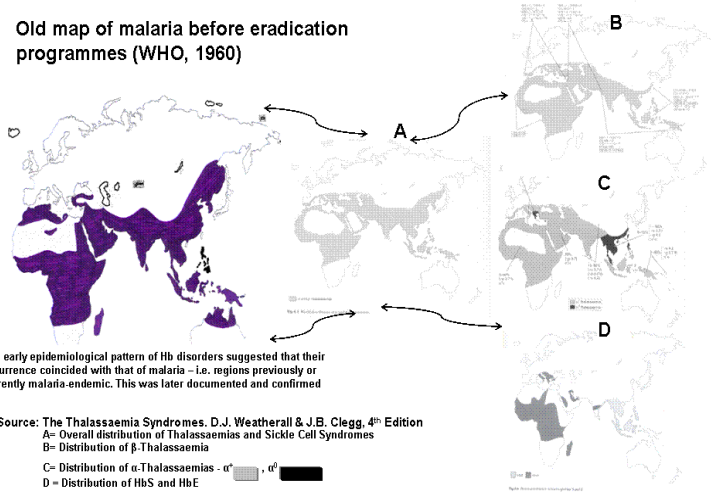


GLOBAL EPIDEMIOLOGY OF HAEMOGLOBIN DISORDERS



Distribution map of Malaria, α - and β -Thalassaemia & Sickle Cell Disease Syndromes

Old map of malaria before eradication programmes (WHO, 1960)



Global Epidemiology Haemoglobin Disorders How accurate are the figures?

- **Around 7%** of the global population carries an abnormal haemoglobin gene

About.....

disorders annually

- **80%** of affected children are born in developing countries
- **70%** are born with Sickle Cell Disease (SCD) and the rest with Thalassemia Syndromes
- **50-80%** of children with SCD die each year in low and middle income countries-Unknown information for Thalassemia

Source: March of Dimes/ Global Report on Birth Defects: The hidden toll of dying and disabled children, 2006

A breakdown of annual number of births with different haemoglobin Disorders from available data

Annual births with major haemoglobin disorders	
β-thalassaemia major	22,989
HbE/β-thal	19,128
HbH disease	9,568
Hb Bart's hydrops (α^0/α^0)	5,183
SS Disease	217,331
S/β-thalassaemia	11,074
SC disease	54,736

Source: Weatherall, DJ (2010): Ann NY Acad. Sci. 1202
2012

Hb Disorders and numbers

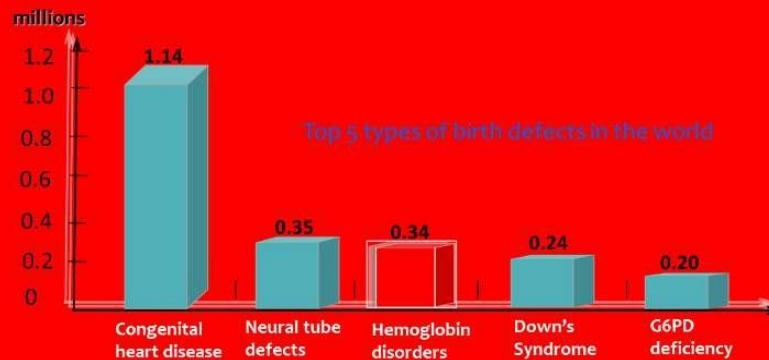
Haemoglobin disorders present a growing health problem in **71%** of **229** countries - that account for **89%** of all the births worldwide



World Bank 2006, report of a joint WHO-March of Dimes meeting 2006

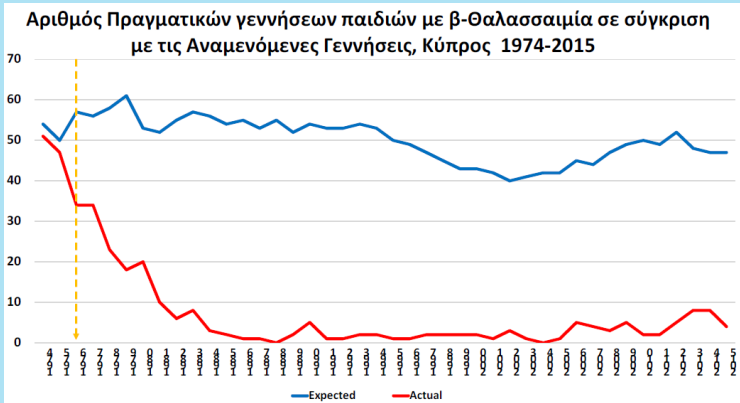
Hemoglobin Disorders are a Group of the Most Common Birth Defects in The World

- 7.9 million children born with birth defects per year
- The top 5 common disorders account for 25% of all birth defects
- Hemoglobinopathy is among the top three common birth defects



Source: World Health Statistics, W.H.O., 2013

March of Dimes Report(2008)



CYPRUS... AND ITS CHALLENGES

WHO estimated in 1971 that in the absence of effective prevention by 2010:

- Increased survival could lead to a rise in prevalence from **1:1000** to **1:138** , which could result in an increase of
- Cost of treatment of **600-700%**
- Prevention costs/1 year = treatment of existing patients (500) for 8 weeks
- The blood requirements of **300-400%**

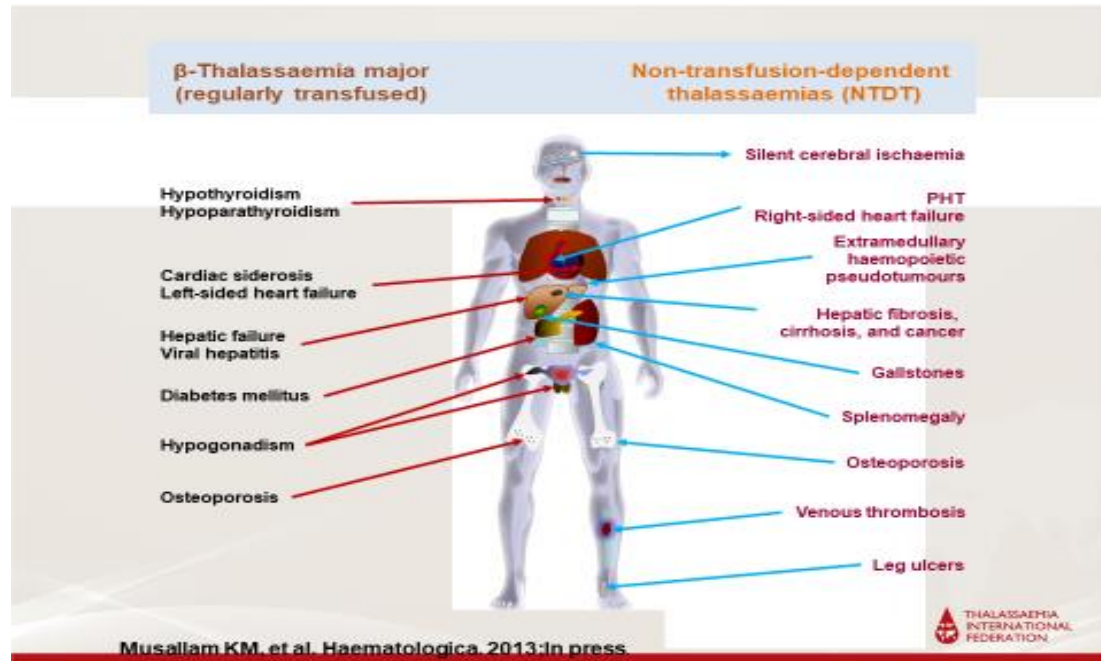
Cyprus Thalassaemia Association....
Blood Donation Coordinating Body (SEAD)....

Cyprus Population Screening Laboratory, 2015

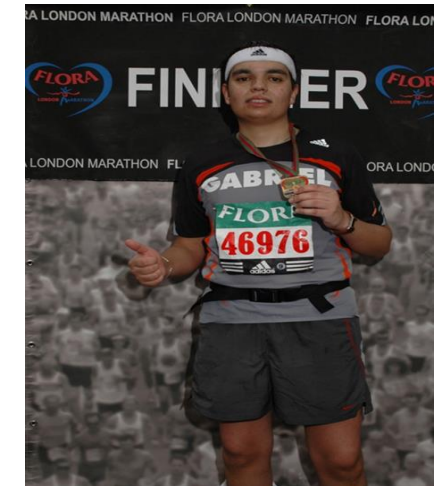
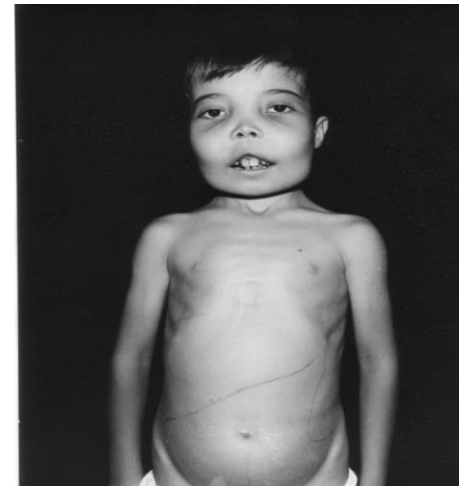
Aims of managing haemoglobin disorders



ADULT THALASSAEMIA- A MULTI-ORGAN DISEASE



- Optimum treatment is required for long survival and good quality of life
- No treatment means early death in childhood
- **Less treatment means poor quality of life and premature death – this is the commonest picture on a global scale**



CHRONIC/NCD DISEASES

Do we have Political/ Policy Decision Makers' Weapons?

Specific Resolutions on Haemoglobin Disorders:

- * EB118.R1 Thalassaemia and other haemoglobinopathies (2006)
- * WHA59.20 Sickle Cell Anaemia (2006)

CHRONIC/NCD*

Regional Strategy and plan of action on chronic diseases (2006)

WHO Resolutions WHA66.10; 63.17; 61.14; 61.8; **59.20***; 59.25; 58.22; 57.17 ;57.16; 57.13; 56.26; 53.17 53.14 and **EB118.R1***

UN Resolution: A/66/83 Prevention and control of non-communicable diseases (2011)

LIST OF RELATED DOCUMENTS:

WHO's Genomic Resource Centre - www.who.int/genomics/en

- WHO, 1989. *Report of the fifth WHO working group on the feasibility study on hereditary disease community control programmes (Hereditary anaemias)*. WHO, Geneva, Switzerland. (WHO/HDP/WG/HA/89.2)
- WHO, 1991. *Guidelines for the Management of Sickle Cell Disease*. WHO, Geneva, Switzerland (WHO/HDP/SCD/91.2)
- WHO, 1993. *Report of a joint WHO/TIF meeting on the prevention and control of haemoglobinopathies*. WHO, Geneva, Switzerland (WHO/HDP/TIF/WG/93.1)
- WHO, 1994. *Educational materials on prenatal diagnosis for Sickle-cell disorder*. WHO, Geneva, Switzerland (WHO/HDP/EM/PN.SCD/94.2)
- WHO, 1994. *Guidelines for the Control of Haemoglobin Disorders*. WHO, Geneva, Switzerland (WHO/HDP/BB/GL/94.1)
- WHO, 1995. *Prevention and Control of Haemoglobinopathies*. WHO Bulletin, 73(3):375-386.
- WHO, 1997. *Inherited Haemoglobin Disorders: an increasing global health problem*. WHO Bulletin, v.75 (3):15-39.
- WHO, 1999. *Services for the Prevention and Management of Genetic Disorders and Birth Defects in Developing Countries*. WHO, Geneva, Switzerland (WHO/HGN/WAOPBD/99.1)
- WHO, 2000. *Primary Health Care Approaches for Prevention and Control of Congenital and Genetic Disorders*. WHO, Geneva, Switzerland (WHO/HGN/WG/00.1)
- WHO, 2002. *Minutes of a WHO meeting on haemoglobin disorders*. WHO, Geneva, Switzerland (WHO/HGN/BB/02.4)
- WHO, 2002. *Report of the Advisory Committee on Health Research. Genomics and World Health*. WHO, Geneva, Switzerland (ISBN 92 4 154554 2).
- WHO, 2003. *Genetic Approaches to Haemoglobin Disorders and Primary health Care*. WHO, Geneva, Switzerland (WHO/HGN/TIF/CONS/03.1)
- WHO, 2006. *Report by Secretariat to Executive Board: Sickle-cell anaemia*. EB117, Doc. EB117/34. WHO, Geneva, Switzerland [www.who.int/gb]
- WHO, 2006. *Report by Secretariat to World Health Assembly: Sickle-cell anaemia. WHA59, Doc.A59/9*. WHO, Geneva, Switzerland [www.who.int/gb]
- WHO, 2006. *Report by Secretariat to Executive Board: Thalassaemia and Other Haemoglobinopathies*. EB118, Doc. EB118/5. WHO, Geneva, Switzerland [www.who.int/gb]
- WHO, 2006. *Executive Board Resolution on Sickle Cell Anaemia*. EB117.R3. WHO, Geneva, Switzerland [www.who.int/gb]
- WHO, 2006. *World Health Assembly Resolution on Sickle Cell Anaemia. WHA59.20*. WHO, Geneva, Switzerland [www.who.int/gb]
- WHO, 2006. *Executive Board Resolution on Thalassaemia and Other Haemoglobinopathies*. EB118.R1. WHO, Geneva, Switzerland [www.who.int/gb]
- WHO, 2006. *Report of a joint WHO/MOD meeting on Management of Birth Defects and Haemoglobin Disorders*. WHO, Geneva, Switzerland.
- WHO, 2008. *Report of a joint WHO-TIF meeting on Management of Haemoglobin Disorders*. WHO, Geneva, Switzerland.
- WHO, 2010. *World Health Assembly Resolution on Birth Defects. WHA63.17*. WHO, Geneva, Switzerland [www.who.int/gb]

Source: S. Fucharoen – 1st Pan-Asian Conference, Bangkok, Thailand, 2012

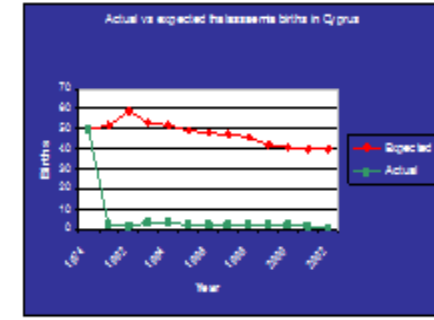
ESSENTIAL FOR SUCCESS CONTROL PROGRAMMES UNDER NATIONAL COORDINATION

National Prevention Strategies

EFFECTIVE

- SCREENING
- AWARENESS
- PRENATAL DIAGNOSIS/
PRE-IMPLANTATION DIAGNOSIS
- REGISTRIES

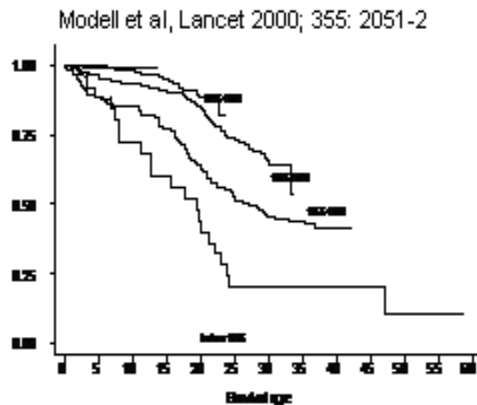
Outside a national Programme -
INEFFECTIVE



National Management Programmes
EFFECTIVE

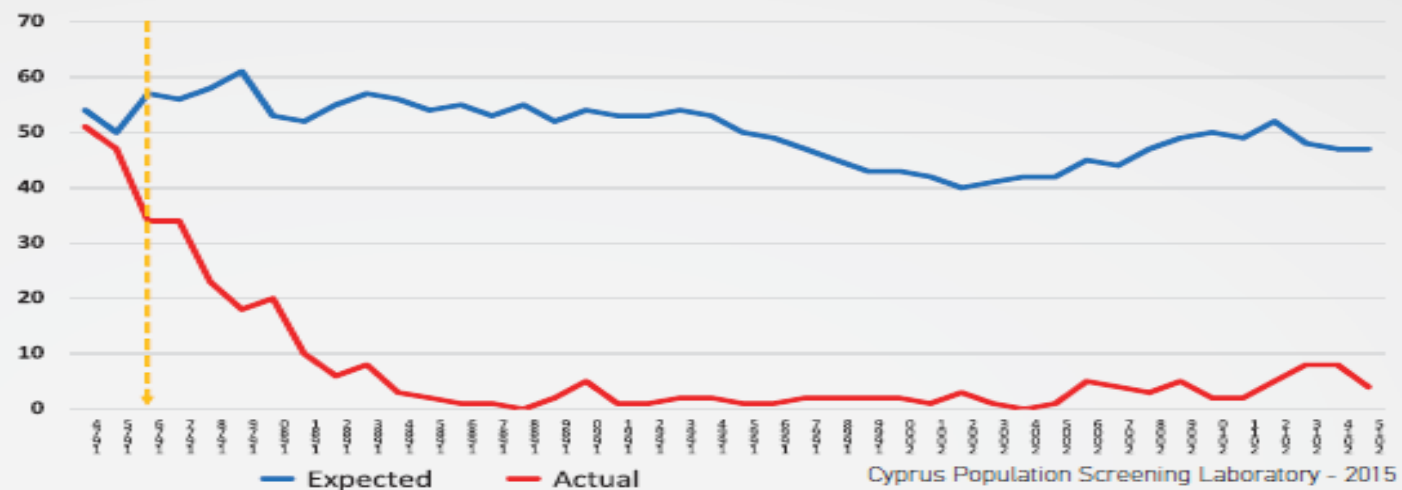
- GUIDELINES
- CME
- REFERENCE CENTRES/NETWORKING
- TRANSFUSION POLICIES
- PUBLIC HEALTH
- AVAILABILITY OF AND ACCESSIBILITY TO DRUGS
- MONITORING DISEASE/TREATMENT

Outside a national Programme
POOR TO NO BENEFIT

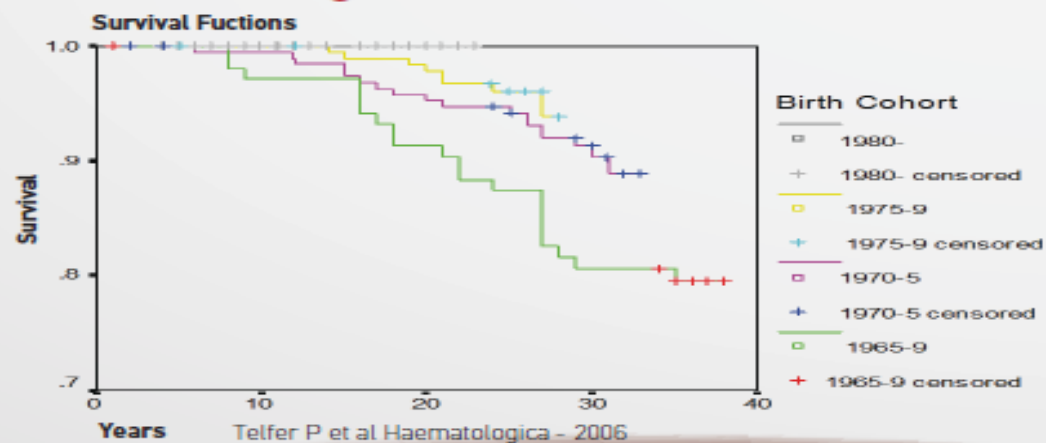


National Control Programme - Cyprus (1974 - 2015)

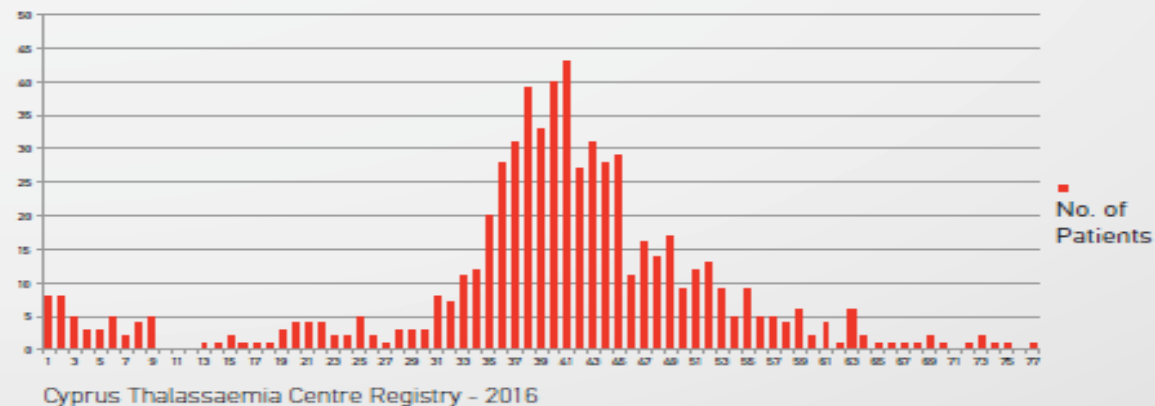
Number of Actual Births vs Expected Births, Cyprus (1974 - 2015)



Patient survival in Cyprus according to birth cohort

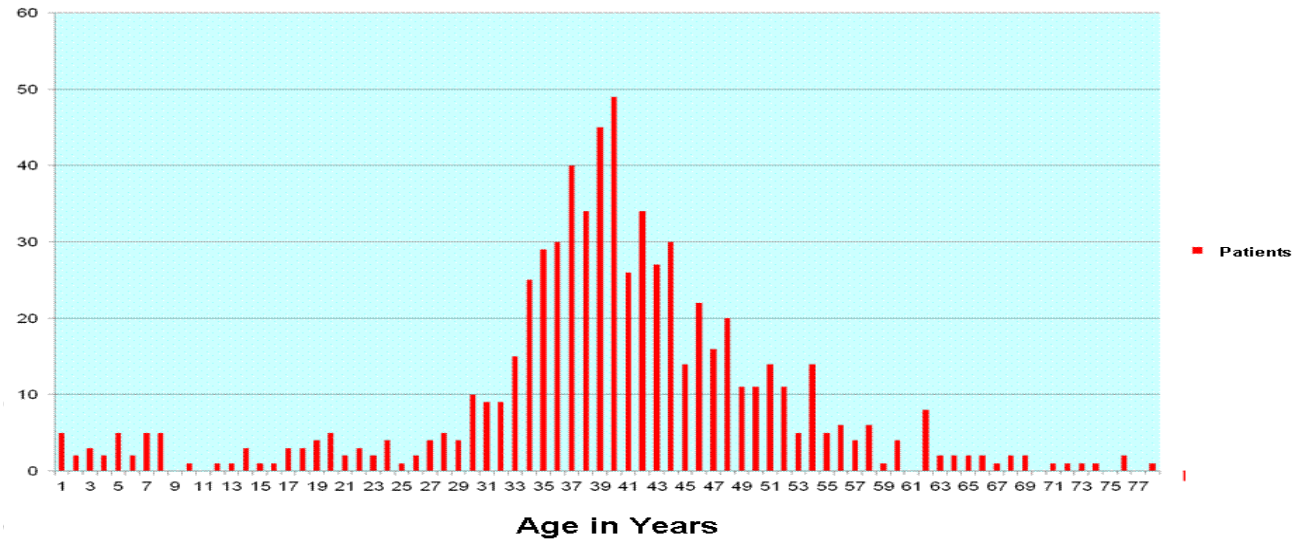


Age Distribution of Thalassaemia Patients in Cyprus

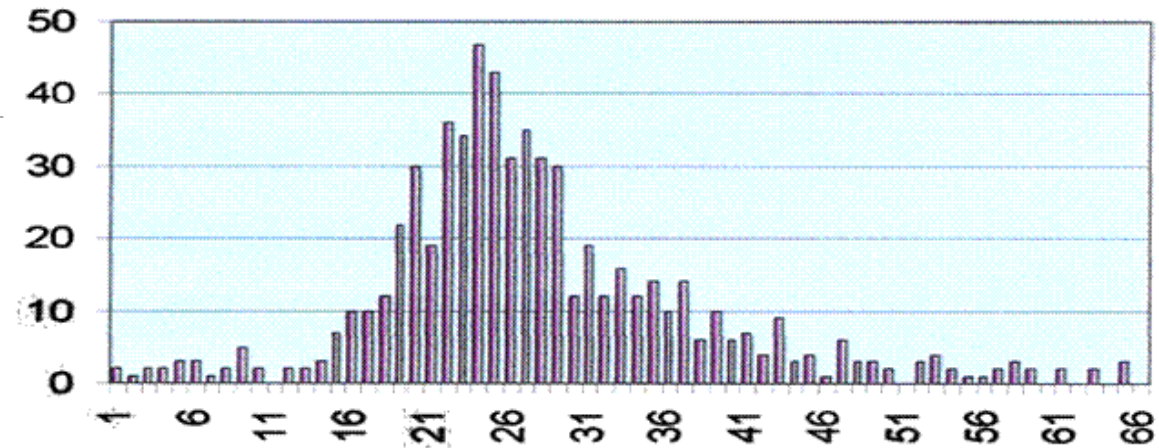


AGE DISTRIBUTION OF THALASSAEMIA PATIENTS IN CYPRUS

Cyprus in 2013

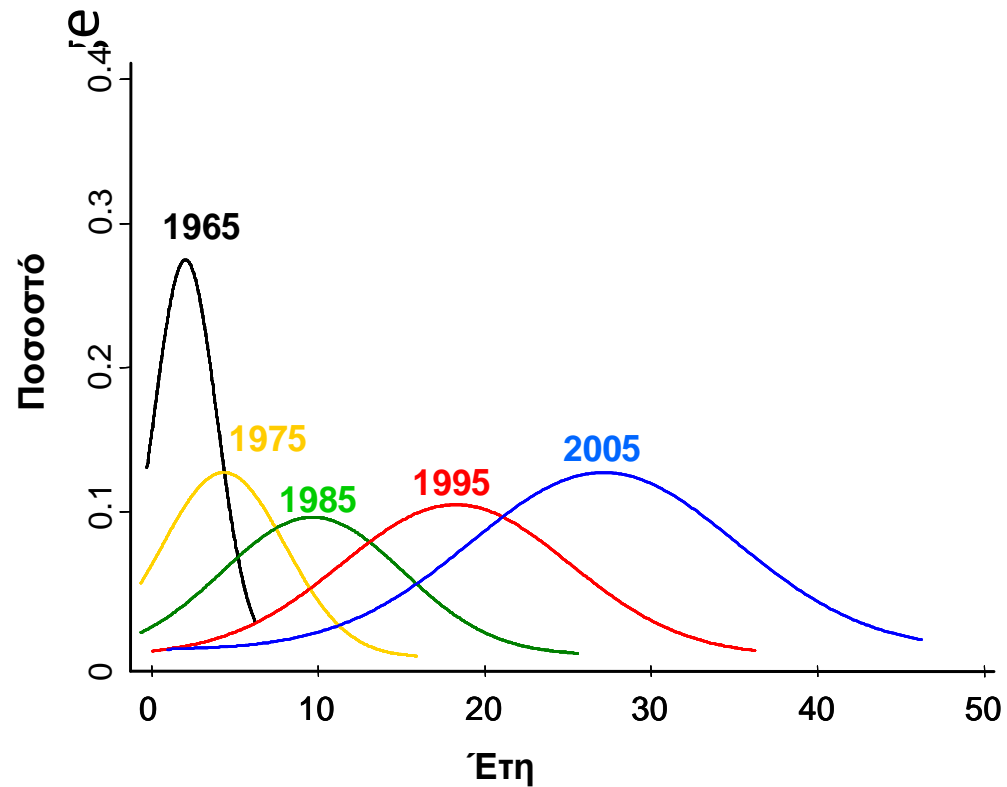


Cyprus in 1999

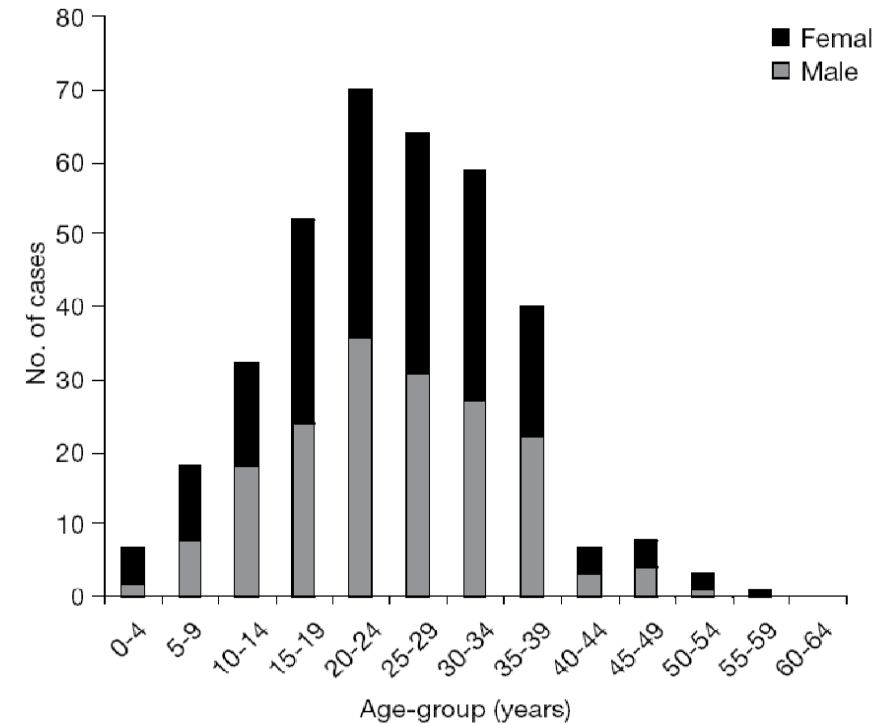


Source: Cyprus Thalassaemia Registry

Changes in Age Distribution of patients with thalassaemia followed in the Greek University Thalassaemia Unit in the period 1965-2005



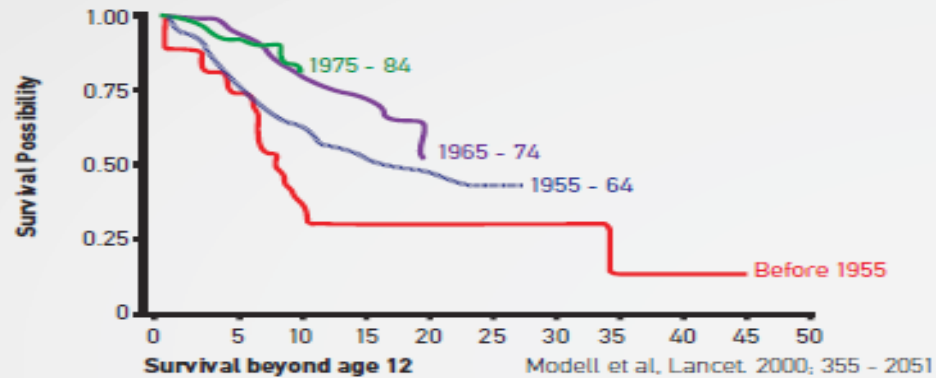
Age distribution of Thalassaemia patients in Hong Kong



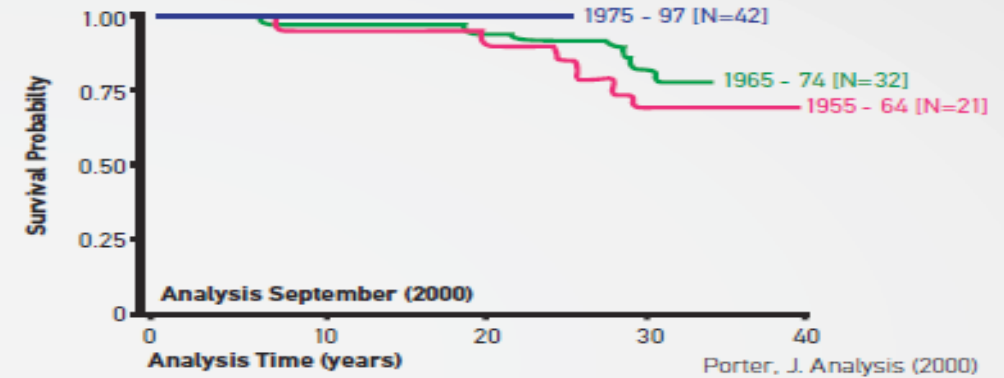
Au WY et al HK Med J 2011;17:261-266)

Improving survival in birth cohorts

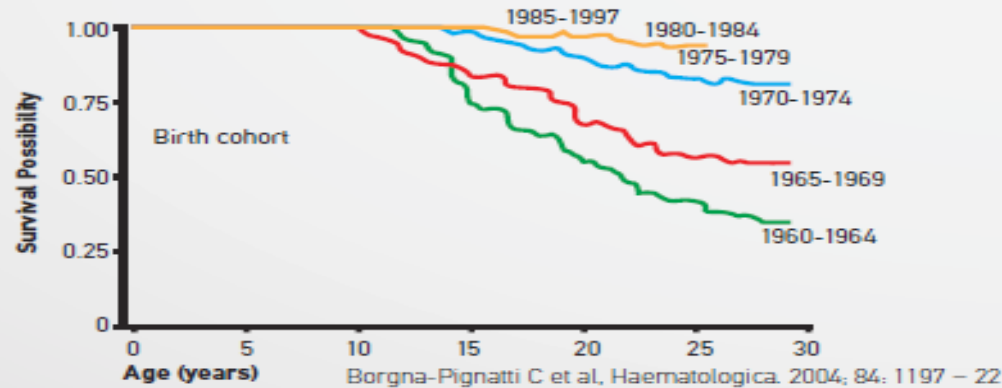
UK registry (N=736)



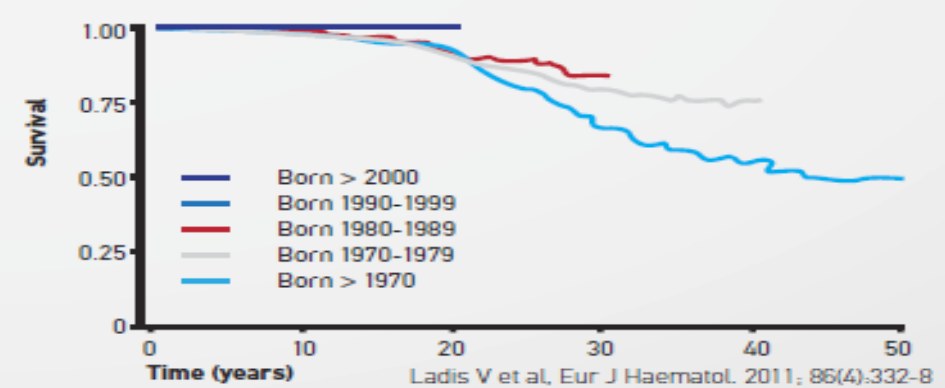
UCLH - Haemoglobinopathy Reference Centre, UK (N=103)



Italian Registry



Greek Registry



Thalassaemia International Federation

The Thalassaemia International Federation is:

- **Non-profit**
- **Non-governmental**
- **Patient/parent-driven**
- **Founded 1986 and registered in 1987 under Cyprus Company Law**

Today:

- **Governed by 18-member Board of Directors guided by a Constitution – currently members from 14 countries (2012)**

Mission

The development and implementation of National disease-specific Programmes, which encompass both the components of prevention and management, across the world.

Vision

Establishment of equal access to quality health, social and other care for all patients with thalassaemia globally, in a truly patient-centred health care setting.

Values

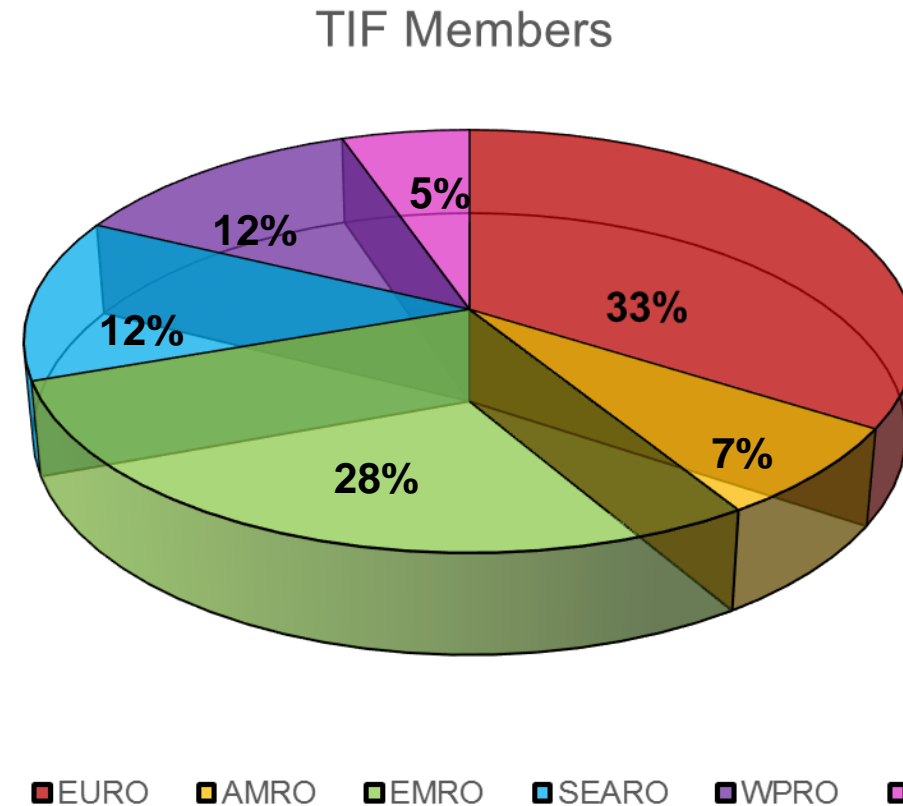
- i. Transparency, ethos, accountability, independence and patient centeredness
- ii. Health and social equity
- iii. Improving knowledge and competence



TIF Membership

TIF Membership TODAY: 204 National Thalassaemia Associations from 62 countries

EURO	Albania, Azerbaijan, Belgium, Bulgaria, Cyprus, France, Germany, Greece, Ireland, Israel, Italy, Luxembourg, Malta, Netherlands, Portugal, Romania, Spain, Turkey, UK
AMRO	Argentina, Canada, Trinidad & Tobago, USA
EMRO	Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Morocco, Pakistan, Palestine, Saudi Arabia, Sudan, Syria, Tunisia, UAE, Yemen
SEARO	Bangladesh, India, Indonesia, Maldives, Nepal, Sri Lanka, Thailand
WPRO	Australia, Cambodia, China PDR (including Hong Kong SAR of China and Taiwan Province of China), Malaysia, Philippines, Singapore, Vietnam
AFRO	Algeria, Mauritius, South Africa



Correct April. 2018

Patients' voice - patients
in the centre of our focus and our work

1 Education...

The development of an Educational Programme comprised of four (4) components:

1. Organisation of events at a local, national, regional and international level
2. Preparation, publication, translation and distribution of educational and awareness-raising material
3. Development of academic/university, post-graduate course (MSc) and fellowship programmes in Haemoglobin Disorder
4. Development of expert patients (parents) programmes

Use of electronic tools to increase access of our educational programme to all relevant stakeholders:

- Electronic Educational Platform
- Electronic Patients' Application
- TIF's Digital Library (application)
- E-Registry Platform
- Video Challenge: sharing of stories and experiences



2 Provision of expert support to Patient/Parent Associations...

at local/national/regional/ and international level:

- ✓ Delegation Visits
- ✓ Meetings
- ✓ Workshops
- ✓ Preparation of official documents for national health authorities
- ✓ Position Papers
- ✓ Courses and meetings

3 Networking...

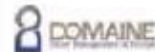
Promotion of collaborations, communication and networking, at the national, regional and international level with:

- ✓ Other (than thalassaemia) disease-orientated patients' organisations
- ✓ Medical, scientific and research communities and associations in the field
- ✓ Official health (and public-health)-related bodies, institutions and agencies
- ✓ Academia, and
- ✓ Pharmaceutical industry.



4 Projects...

Undertaking of projects (leading or participating) aiming to support improvements in the quality of health, social, and other care.



5 Communications...

Establishing active and productive communication with our members and collaborators through:

- TIF Magazine
- e-Newsletter
- Board Member's Update
- Social Media and website



Pillars of Work

Delegation Visits (1993 – 2018)

150 in 52 countries

(Meet, Discuss, Prepare Consensus/MOU Documents)

Objectives:

- ✓ Investigate/Follow-up
- ✓ Distribute Of Educational Material
- ✓ Develop Networks/Collaborations/Partnerships
- ✓ Undertake Projects
- ✓ Participate/Contribute/Organise Educational Events (National Level)
- ✓ Provide *Ad Hoc Consultations*

Meet with:

- Official Health Related Bodies/Authorities
- Medical/Patient/Parent Communities (disease and non-disease specific)
- Other NGOs (Health and/or Humanitarian-related)



Educational programme (1993 – 2015)

Publications



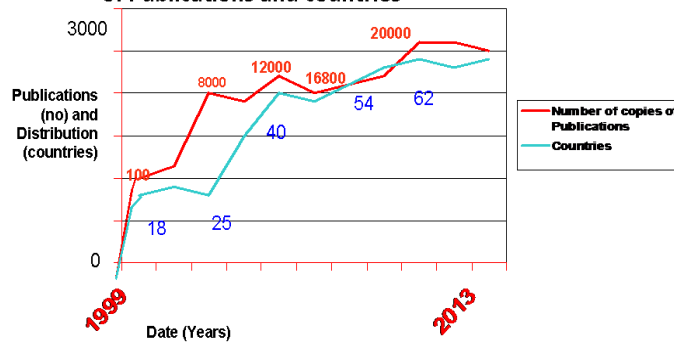
24 books published, and/or translated and distributed worldwide

For patients, parents,
For healthcare professionals
For the community at large.

- ✓ **13** books translated, published and distributed (10,000 in 22 countries)
- ✓ **3** new versions of existing Guidelines

PUBLICATION	YEAR	LANGUAGES	COPIES/ DISTRIBUTION
Blood Safety Kit Manual for patients and parents	1999	12	6,000 /25 countries
Guidelines for the clinical management of Thalassaemia – 1st Edition	2000	10	50,000 /60 countries
Compliance to Iron Chelation Therapy with Desferrioxamine	2001	12	41,000 /45 countries
About thalassaemia	2003 & 2007	23	34,000/45 countries
Prevention of Thalassaemias and other haemoglobinopathies – Vol. I	2003 & 2013	12	5,000 /32 countries 2,000/ ongoing
Prevention of Thalassaemias and other haemoglobinopathies – Vol. II	2005 & 2012	14	5,000 /32 countries 1,000/ ongoing
Guidelines for the clinical management of thalassaemia – 2nd Edition & 2nd Revised Edition	2007 & 2008	9	12,000 /30 countries
Patients' Rights	2007	6	10,000 /25 countries
A guide to establishing a non-profit patient support group	2007	6	8,000 /20 countries
Set of Educational booklets: 1. β -thalassaemia; 2. α -thalassaemia; 3. sickle cell disease	2007 & 2013	12	15,000 /25 countries 5,000/on-going (Cyprus & Greece)
Sickle Cell disease – Booklet for patients, parents and the community	2008	4	6,200 /15 countries
All About thalassaemia – Cartoon Booklet	2010	9	17,000 /15 countries
Guidelines for the management of Non-Transfusion Dependent Thalassaemia (NTDT)	2013	31	7,200/ongoing
A Guide for the Haemoglobinopathy Nurse	2012	22	3,600/ongoing
Emergency Management of Thalassaemia	2012	42	5,600/ongoing
Guidelines for the Management of Transfusion Dependent Thalassaemia	2014	21	11,000/ongoing
Haemoglobin disorders	2014	41	2,600/ongoing

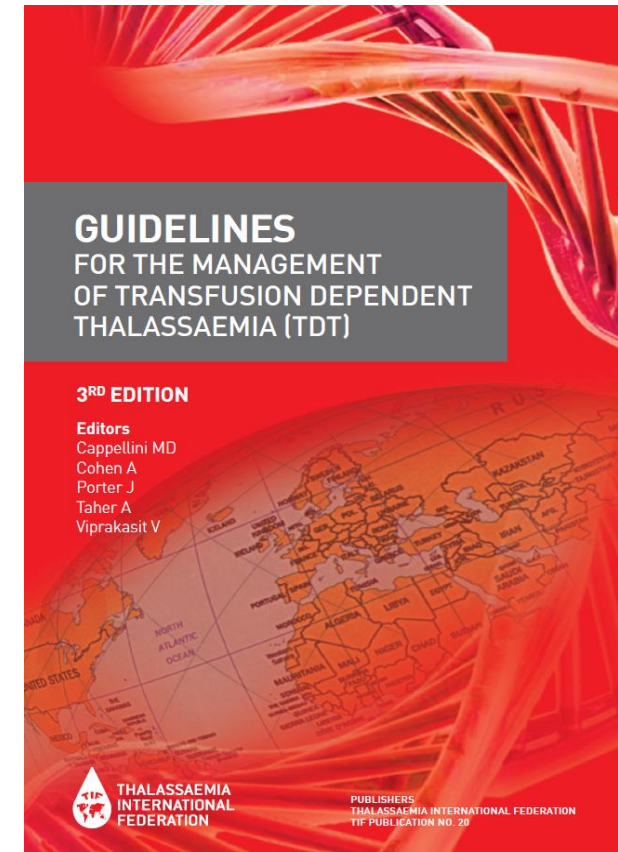
Distribution of TIF Publications - Number of copies of Publications and countries



The Global Impact of TIF

Guidelines for the Management of Thalassaemia:

- ✓ Used in **57 countries**
- ✓ **11,000 copies** distributed
- ✓ Translated in **14 languages**
- ✓ Adopted by **EHA & National Haematology Associations** in 48 countries



The Global Impact of TIF

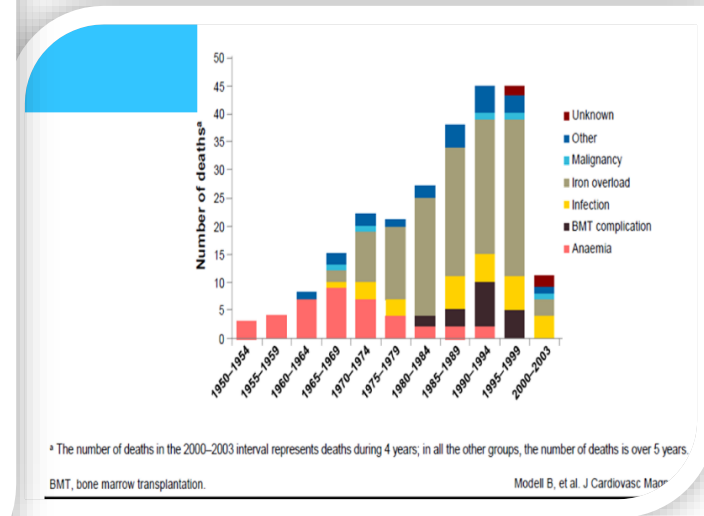
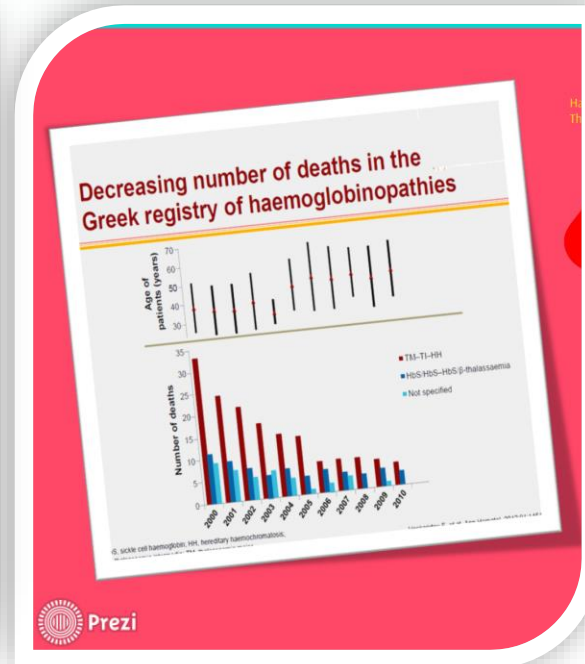
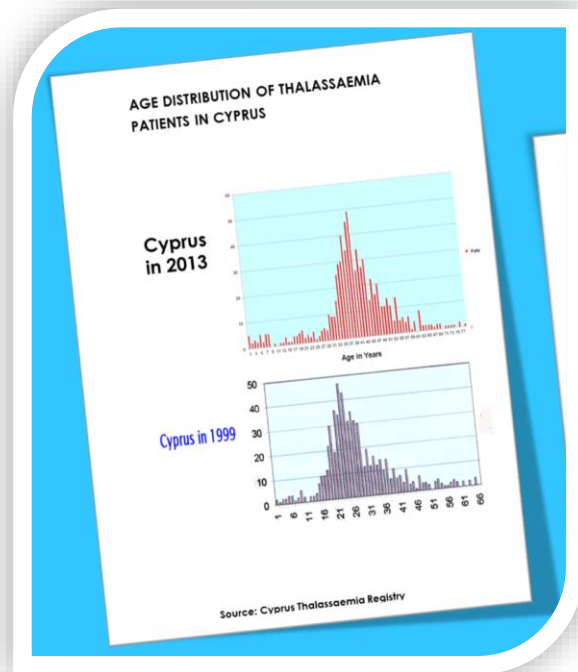


Thalassaemia International Federation (TIF) awarded with:

- o Dr Lee Jong-wook Memorial Prize for outstanding contribution in public health
- o the Outstanding Contribution Award of the University of Nicosia, Cyprus



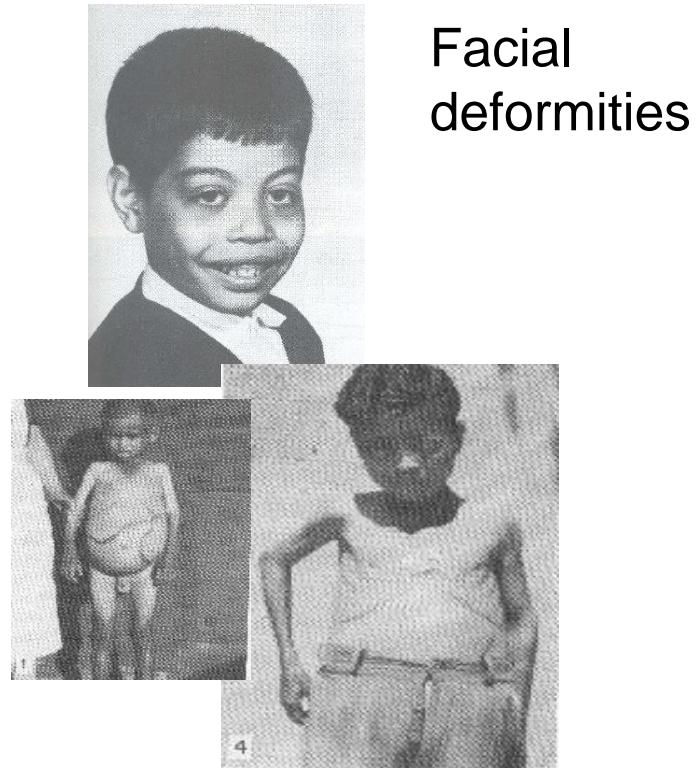
Making progress in the management of thalassaemia



The face of thalassaemia

Then

Now



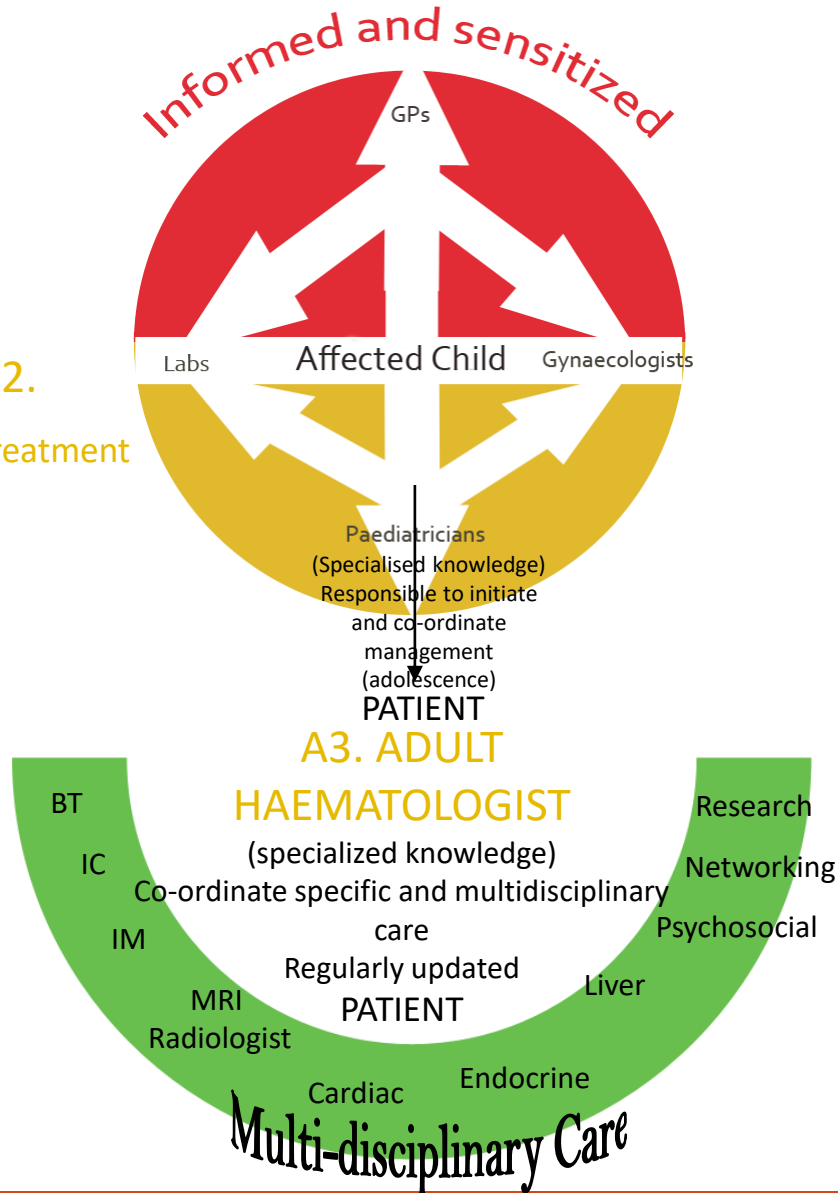
Minimally treated patients aged 8 and 20 (Cyprus, 1940s)



Photos with permission (Modell and Berdoukas, 1984)

A1. AWARENESS

A2. Treatment



PATIENTS' JOURNEY

NATIONAL REGISTRY

FOR SUCCESS

- Political Commitment & Resource allocation
- Strategy → A (management) and B (Prevention)
- Public/Private Partnership

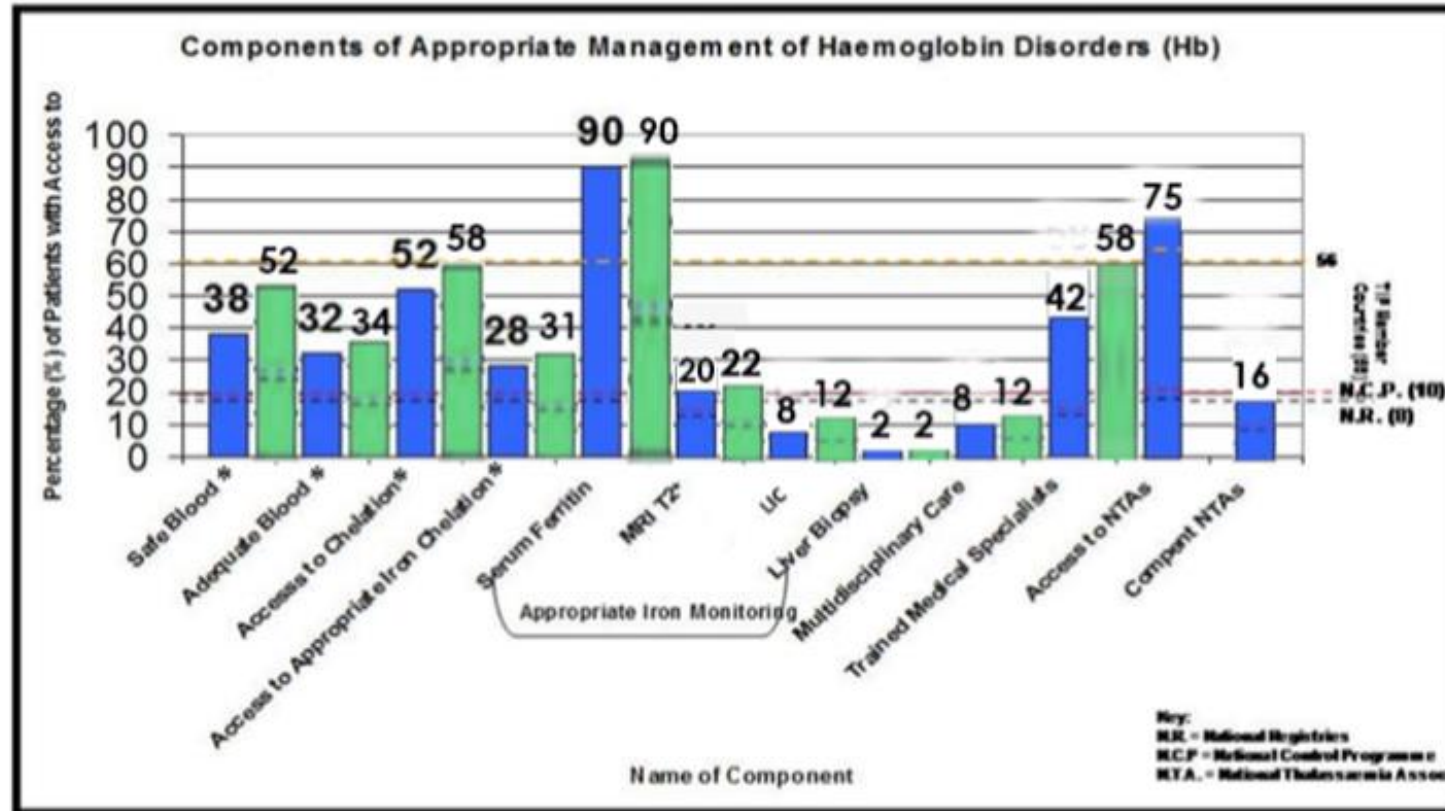
A4. SPECIALISED REFERENCE SERVICES

- Consultation (second opinion)
- Research
- Clinical Trials
- BMT
- Multidisciplinary Care (in collaboration with treating medical specialists)
- Safeguard the quality and patient safety
- Collaboration with national health authorities
- Collaboration with research and reference centres regionally and internationally

B. EFFECTIVE PREVENTION (NATIONAL LEVEL)

- Awareness
- Screening
- Prenatal diagnosis
- Counselling

The global reality - TIF's perspective



(64 NTAs/ 55 countries, 5000 patients)

*As per the recommendations of TIF's Guidelines 1999/ 2008/2014

Source: TIF Survey, 2004/2014

TIF AT COUNTRY LEVEL

<p>PRIORITISATION at National Level/ Political Commitment (but no holistic national programmes):</p>	<p>Advanced Stage- Mostly on Management (Less on Prevention-except P.R.. China)</p>	<p>Under serious consideration:</p>
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EURO:

Bulgaria
Albania
Turkey

EMRO:

Palestine
Iran
Lebanon
Iraq
Syria
UAE
KSA

Egypt
Tunisia

AMRO:

Brazil
Trinidad & Tobago

SEARO:

Thailand
Indonesia
Sri Lanka

AFRO:

Algeria

EMRO:

Pakistan
Morocco

EURO:

Russian Federation
Azerbaijan

SEARO:

India

WPRO:

P.R. China

WPRO:

Vietnam

In consideration, but very limited action:

EMRO:

Afghanistan

Yemen

EURO:

Kazakhstan

Kyrgyzstan

Uzbekistan

Tajikistan

SEARO:

Myanmar

Nepal

Bangladesh

**ONLY NINE (9) COUNTRIES
HAVE IMPLEMENTED COMPREHENSIVE
CONTROL PROGRAMMES:**

EURO:

CYPRUS

GREECE

ITALY

UK

WPRO:

SINGAPORE

TAIWAN

HONG KONG

AMRO:

CANADA

USA

OUR JOURNEY – THE LABYRINTH

Understanding, Preventing, Monitoring and Treating Hb Disorders

Making progress in the management of thalassaemia



Global - TIF Patients/Parents raise voice - 1986

First international Conference - 1986

Raise awareness and patients/ parents voice Educational Programme

Delegation Visits

1991 - 2000

- Holistic Care components identified
- Transfusion goals
- Iron Chelation goals
- Monitoring tool
- Multidisciplinary care
- Guidelines
- Gene Research

1st Guidelines for the Clinical Management of Thalassaemia

Collaboration with WHO 1996

Workshops – national / regional

1st vol. Prevention of Thalassaemias and other Haemoglobin Disorders

2001 - 2008

- Updating and upgrading Guidelines
- Health professionals and patients' education focus
- NTDs???
- Gene Research

Regional Conferences

2009-2014

- Guidelines for the Non Transfusion Dependant Thalassaemia (NTDT)
- Curative approach Gene therapy
- Advances in care

- 1st ed. Guidelines for the Non Transfusion Dependant Thalassaemia (NTDT)
- 3rd ed. Guidelines for the Transfusion Dependant Thalassaemia (TDT)
- Emergency Guidelines
- 2nd ed of Prevention volumes
- Cartoon book – All About Thalassaemia

2015...

E-health tools

- DIGITAL LIBRARY – SMARTPHONE APPLICATION WITH BOOKS
- WEBSITE
- THALIME
- SOCIAL MEDIA (Facebook, LinkedIn, Twitter, Youtube, Instagram)
- VIDEO CHALLENGE
- REGISTRY

National Patients/Parents raise voice - 1986

- Multidisciplinary Curve?
 - Endocrine??
 - Liver??
 - Heart??
- Chelation goals??
- Transfusion goals??
- Viral Hepatitis??
- Blood Safety?? (HCV, HIV)
- Monitoring tools?? HSCT/ Gene research??

- Iron??
- Desferrioxamine??
- Use??
- Safety??
- Effectiveness??
- Transfusion goals??
- Blood Safety?? (NANB)
- HSCT/ Gene Research

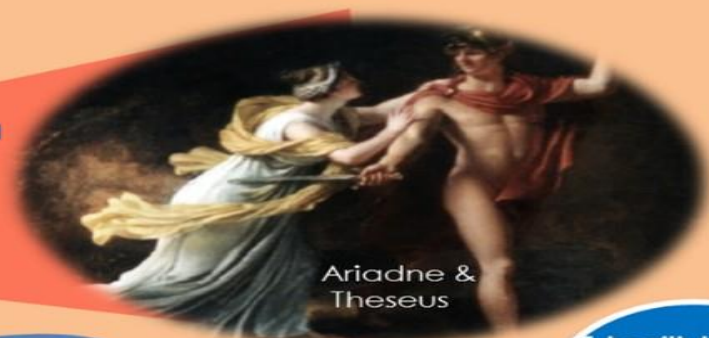
- Anaemia??
- Organomegaly??
- Bone Deformity??
- Growth Retardation??
- Only blood transfusion b
- Target Hb???
- Blood safety???
- PREVENTIONS??

THE UNKNOWN

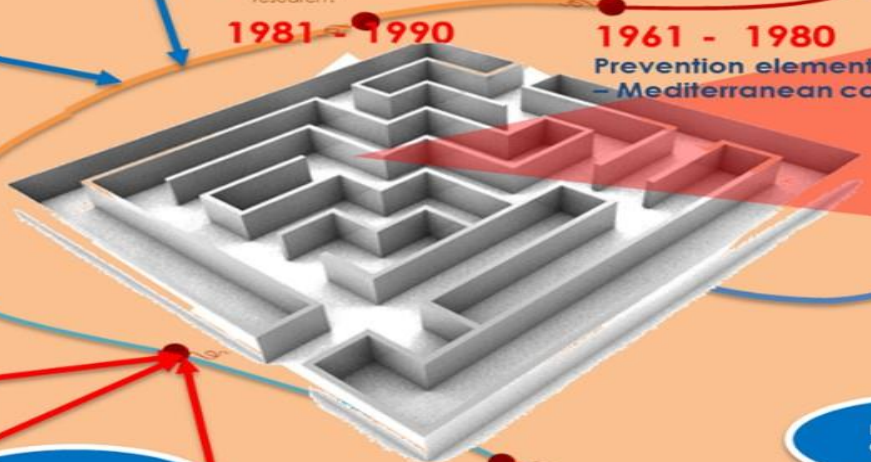
Ariadne's Thread

1950 1960

FINAL EXIT: CURE



Ariadne & Theseus



1981 - 1990

1961 - 1980
Prevention elements identified – Mediterranean countries

What they said:

**25 YEARS
OF CONTRIBUTION**

"TIF has done a great job in educating patients, parents and health providers around the world. No academic institution or governmental or international agency can claim a similar accomplishment."

"We are very much aware of the important work which is being done by TIF all over the world ... we are looking forward towards new collaborative developments"

- Representative of WHO European
Regional Office

- Professor George Stamatoyiannopoulos
Medical Geneticist
University of Washington

'TIF has successfully focused attention on patients' equal rights to high quality care , building a global thalassaemia family'

*-Thalassaemia Association Ninava
Iraq*

Thank you for your attention



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