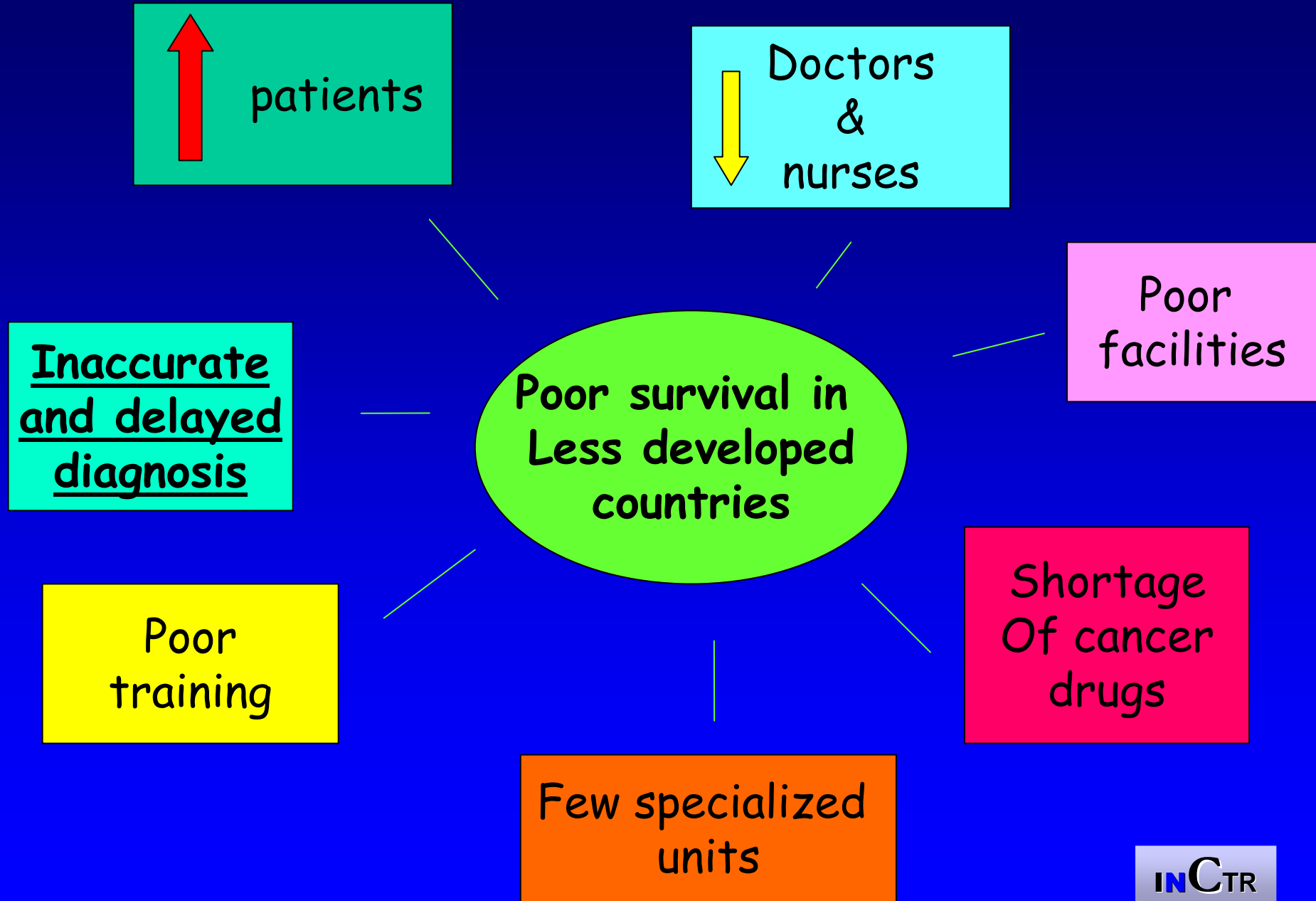


# I-PATH AND ITS APPLICATION IN PEDIATRIC ONCOLOGY

Aziza Shad MD  
Lombardi Comprehensive Cancer Center  
Georgetown University Hospital  
Washington DC, USA  
and  
INCTR USA



# Inaccurate and Delayed Diagnosis

- Curable cancers go unrecognized
- Delays result in spread of cancer
- The few valuable human and financial resources are wasted

# Solution

- Increase capacity in pathology in resource - poor countries
- Training
  - On -site
  - Online
- I- Path Program
  - Improvement in diagnosis
  - Patient consultations
  - Collection on data

# Increasing Capacity in Ethiopia to Treat and Cure Pediatric and Adolescent Cancer



# Goal for Ethiopia

- Establish a Center of Excellence for Pediatric and Adolescent Oncology at the Tikur Anbessa Hospital in Addis Ababa

# Partners in Ethiopian Project

- Federal Ministry of Health, Ethiopia
- Addis Ababa University Medical Faculty
- Georgetown University School of Medicine, Dept of Pediatrics
- Tikur Anbessa Hospital, Addis Ababa
- INCTR USA

# Mechanism

- Twinning program with Georgetown University and INCTR for training and education
- Curriculum for Fellowship Program in Pediatric Oncology and Palliative Care
- Curriculum for Pediatric Oncology Nursing
- **Telecommunication: I-Path**
- Focused Training Workshops
- Data Management
- Visiting Faculty Program

# Volunteer Faculty to Date

- Carlos Galindo-Rodriguez
- David Korones
- Shamvil Ashraf
- Sameer Bakshi
- Ahmed Naqvi
- Trish Scanlan
- Sheila Weitzman
- Udo Bode
- PAX Team
- Julia Challinor
- Melissa Adde
- Savitri Singh-Carlson
- **Nina Hurwitz**
- Babro Norrstom
- Michael Weintraub
- Prasanna Kumar
- Shripad Banavali
- Sidnei Epelman
- Ethiopian Faculty

# Implementation - Phase I

- Separate Pediatric Oncology Unit
- Create oncology team
- Improve Infection Control Practices
- Improve Diagnostic Capacity:
  - Training of pathologist
  - I-Path
- Cancer Registry
- Institute Standardized Protocols and Track Success through Data Collection
- Palliative Care
- Reduce Abandonment of Treatment

# Implementation - Phase I

- Fellowship in Pediatric Oncology
  - September 2011
  - 2 year training program
  - Short term off - site training in developing countries
  - Visiting Faculty Program
  - On-line training
- Training will incorporate exposure to pathology

# Update on I-PATH Program

- Dr Mahlet - young pathologist from Black Lion Hospital being trained
  - Will spend time in Switzerland
- Online:
  - Online consultations
  - Dialogue with the clinicians
  - Modification of pathology request forms
  - Data collection
  - Pediatric Tumor Board - eventual goal

# Online patient chart

3year /F ALL relaps, details see form

## Gallery:



images of peripheral  
blood and bone marrow  
aspirate, Giemsa



form 1a: clinical data

### Patient Information

case/specimen-nr:

Study number

patient initials:

D.S.

*please do not write complete patient names !*

age: 3yrs

sex: F

Patient data, summary

This is a child who was diagnosed to have acute lymphoblastic leukemia (ALL, L2 morphology) 11 months back when she was presented to Tikur Anbessa hospital, a central referral hospital, with easy fatigability and generalized pallor of 6 months duration. She preferred being carried by someone than walking herself, otherwise had no history of epistaxis or bleeding from any site at presentation. She was initially treated with multivitamin syrup with iron and showed relative improvement, but soon became pale again at which time she was brought to medical attention for full examination.

She had no history of cough, contact history with TB patient nor had symptom complex of TB

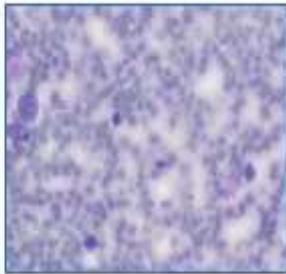
Vaccinated according to EPI

Growth and development is optimal

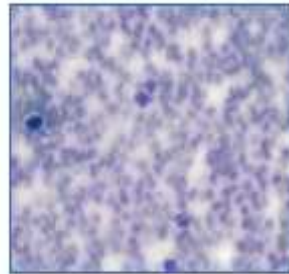
She is the first daughter to her family

# Open folder: Images of peripheral blood and bone marrow aspirate

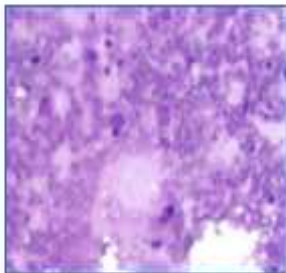
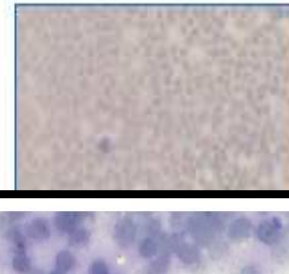
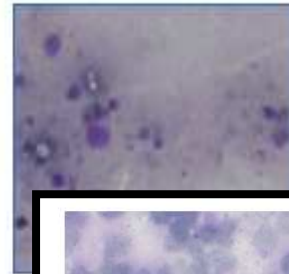
## Gallery:



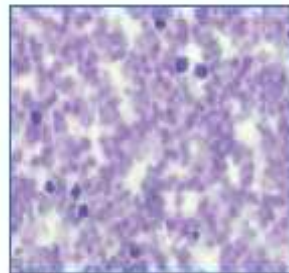
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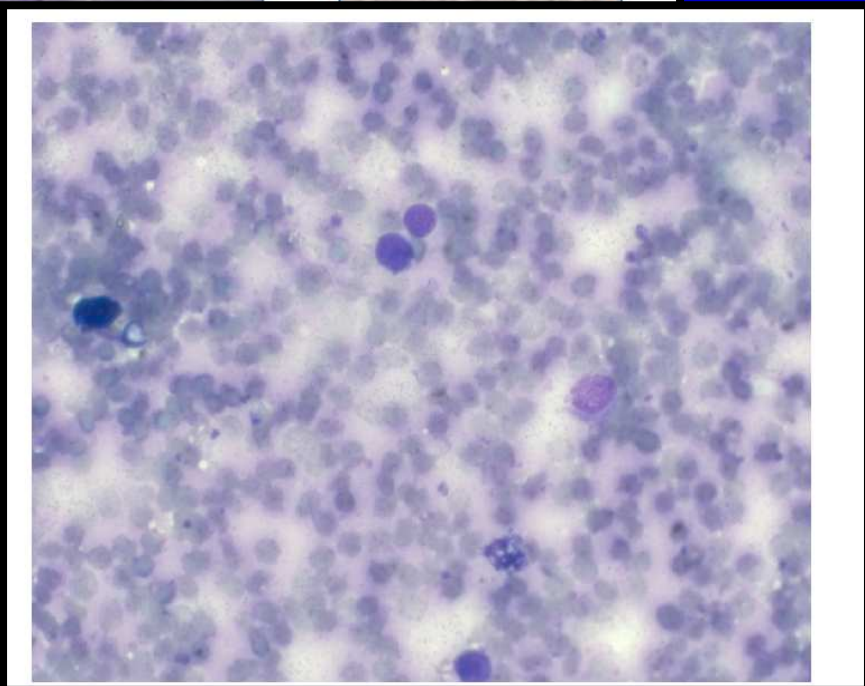
B2011\_3236\_02.jpg



B2011\_3236\_05.jpg



B2011\_3236\_06.jpg



# Online Patient Chart Being Designed



histology



cytology



radiology



form 1a: clinical data



Form 3: peripheral blood  
smear



Form 4: bone marrow  
aspirate



Form 6: flow cytometry



Form 7a: conventional  
cytogenetics



Form 7b: FISH

All information can be put into Excel and extracted for data analysis

# Online forms Being Designed

## Flow Cytometry

SSC/CD45  
 combination of both

3.2. Cells gated on average

% of events

**4 Results**

Marker	% positive blasts	Blasts: positive / negative	Intensity:	<i>NA = not as</i> <i>M = medi</i> <i>W = weak</i> <i>S = strong</i>
CD2	<input type="text"/>	---	---	
cCD3	<input type="text"/>	---	---	
CD3	<input type="text"/>	---	---	
CD4	<input type="text"/>	---	---	
CD7	<input type="text"/>	---	---	
CD9	<input type="text"/>	---	---	
CD10	<input type="text"/>	---	---	
CD11b	<input type="text"/>	---	---	
CD13	<input type="text"/>	---	---	

## Conventional Cytogenetics

**2 Quantity**

Nr. of cells ( $10^6$ )

**3 Conventional cytogenetic result**

3.1. Nr. of metaphases analysed:

3.2. G-banding resolution level:

NA  
 <300 bands  
 300-400 bands  
 >400 bands

3.3. Karyotype:  NA (failure)  normal  abnormal

3.4. Description according to ISCN 2005:

3.5. Clonal classification:

NA (failure)  
 NN (all cells normal)  
 AN (admixture of abnormal and normal cells)  
 AA (all cells abnormal)

# Summary

- Improvement in survival can only occur if diagnosis is accurate and timely
- It is essential to include a pathology component to all new and existing INCTR programs
- I-Path is one such tool
- Once developed fully, can become a model for other programs



- Thanks to Dr Nina Hurwitz and her team
- Black Lion Pediatric Oncology and Pathology Group
- INCTR