



# The Children's Oncology Group: Use of real time laboratory data to direct treatment

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**CHILDREN'S  
ONCOLOGY  
GROUP**

The world's childhood  
cancer experts

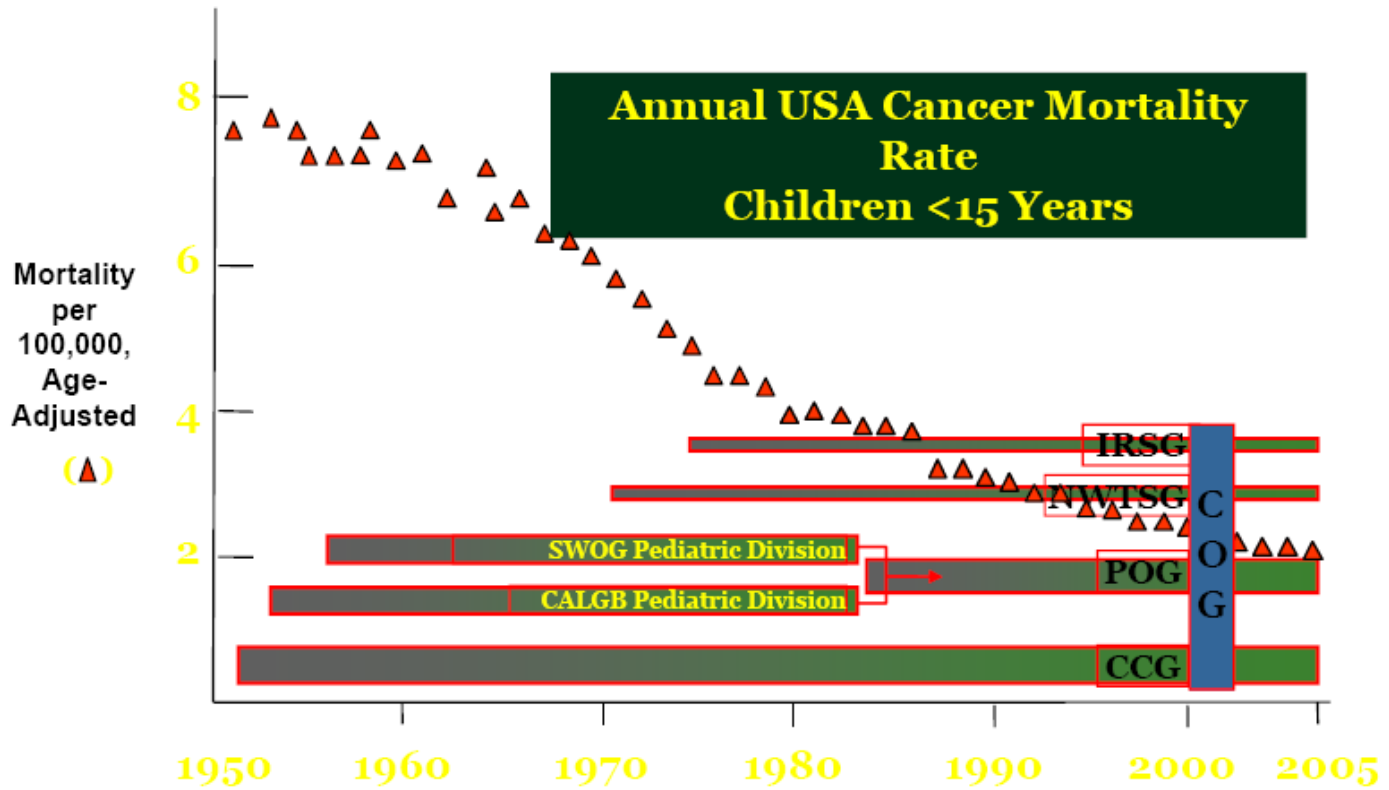


# Children's Oncology Group (COG)

- **National Cancer Institute funded cooperative group conducting studies of the biology and treatment of childhood cancers**
- **COG mission: Cure and prevent childhood and adolescent cancer through scientific discovery and compassionate care**



# Pediatric cooperative groups and childhood cancer mortality





# COG objectives

- **Conduct clinical trials**
  - **Focus on improving outcome or maintaining high cure rate with reduced short- and long-term toxicity**
- **Conduct correlative laboratory research with goal to move findings into clinic to impact treatment**



# COG at a glance

- **215 institutions worldwide, but mostly in US and Canada**
- **Operations Office**
- **Distributed Statistics and Data Center: single data center, with statisticians located in 4 locations**



# COG Clinical trials portfolio

Study type	Average active studies	Average annual study enrollment
Phase I	9	~150
Phase I/II, II	15	~350
Phase II/III, Pilot, III	45	~3500
Non-treatment (mostly lab-based)	90	~6000



# Personalized (tailored) therapy

- **Cancer treatment always tailored to patient/disease characteristics**
- **Patient age, concomitant conditions; disease histology, extent (“Stage”), response to initial therapy**
- **Recent understanding of tumor biology and prognostic factors allow assignment of ‘tailored’ treatment**



# Ex: Pediatric medulloblastoma

- **Long-term event-free survival (EFS) overall: ~75%**
- **Wnt-driven tumors have favorable outcome: long-term EFS > 90%**
- **Could consider reduction in therapy to reduce long-term toxicities, while maintaining outcome**





# Ex: Pediatric acute myeloid leukemia

- Overall long-term EFS: ~40%
- Patients with high allelic ratio FLT3/ITD+ AML have poor outcome
- Sorafenib, a multi-target tyrosine kinase inhibitor, effective in FLT3/ITD+ adult AML; consider adding to standard therapy for these patients



# Implementation challenges

- **Technology to identify genetic abnormalities or other prognostic factors may not be available at many institutions**
- **Goal is to make these universally available in real-time to allow their use in assigning treatment**



# COG research template

- Risk classify patient and begin treatment using institutionally-generated information
  - Example: pre-B ALL: age, WBC count
- Send specimens to central labs for determining genetic abnormalities, centrally assessed histologic features, minimal residual disease



# COG research template (cont'd)

- **Collect and computerize these data in real time**
- **Use these data to assign tailored treatment following some initial therapy**



# COG research template (cont'd)

- **The COG clinical data management system allows this tailoring of research treatment**
  - **Patient specimens sent to central labs**
  - **Research data generated by central labs and submitted in real time to COG**
  - **Data directs further treatment**



# Examples from COG research

- **Acute lymphoblastic leukemia (ALL: Dr. Meenakshi (Mini) Devidas, Lead Statistician)**
- **Neuroblastoma (Dr. Wendy London, Lead Statistician)**