Pediatric Oncology in Resource Limited Settings

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Lecture Objectives

• An understanding that the majority of pediatric cancer diagnosed occurs in middle or low income countries
• An overview of challenges of diagnosing and delivering cancer care in resource constrained settings
• An understanding of the role global consortiums and collaborations play in developing locally adapted cancer care guidelines for different global settings
My Non-Traditional Path

• **College**: Neuroblastoma research
• **MPH (after medical school)**: Epidemiological study on brain tumors in Morocco
• **Cancer Prevention Training Fellowship**: MD Anderson
• **Refugee Health Year**: Upstate NY
• **Pediatric Residency**: St Jude’s International Outreach Program
• **Global Health Delivery Fellowship**: Harvard Medical School, Boston Children’s Hospital, and Partners in Health
• **Currently**: Children’s Hospital of Colorado and the Center for Global Health
  
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Epidemiologic Shift

• Increasing global cancer burden\textsuperscript{1}
  – 2000: 10 million
  – 2020: 15 million
  – 2050: 24 million

• Globally 175,000 children and teens diagnosed with cancer annually\textsuperscript{5}
  – 85% (150,000) live in low and middle income countries
  – Account for more than 90% of deaths
  – Curable, but not preventable cancers\textsuperscript{6}
Health as a Human Right

• 2000: UN Millennium Summit declaring MDG’s
  – #4 Reduction of child mortality
• 2008: World Cancer Declaration
  – Reduce the global cancer burden by 2020 through 11 key targets
• 2011: High level UN general assembly meeting
  – Focus on prevention and control of NCD’s (including cancer)
• 2015: Sustainable Development Goals (SDG’s)
  – #3 Good health and well being
Cancer vs Malnutrition??

- Ability to deliver subspecialty care tests the overall health infrastructure
- 5 year survival rates are directly proportional to several health indicators
  - Number of physicians and nurses/1,000
  - Annual government health care expenditure per capita

Cancer kills more people in the developing world than HIV/AIDS, TB and malaria combined

“The idea that some lives matter less is the root of all that’s wrong with the world.”
- DR. PAUL FARMER
Major Barriers to LRS Care Delivery

- Late presentation
- Diagnostic challenges
- Limited laboratory and pathology resources
- Prohibitive cost of chemotherapeutics
- Supply and cold chain challenges
- The role of education and psychosocial factors to prevent abandonment
- Follow up
Late Presentation

• Limited access to healthcare
• Lack of education
  – Cultural barriers
  – SES barriers
• High “perceived” cost of care
• Poor referral system
  – Lack of care options
Diagnostic Challenges

• Provider level of knowledge of pediatric cancers leading to early detection

• Lack of pediatric oncology care
  – Limited in scope, often adult oncologist or physician with no oncology training

• Delivery of care by skilled health workers
Limited Laboratory and Pathology Resources

• High quality tissue samples must be obtained
• Skilled pathologists
  – Specialty training
  – Available stains
  – Reasonable turn around time
Prohibitive Cost of Chemotherapeutics

- Minimal literature comparing costs in HIC versus LIC
- Resources required vary by cancer type
  - Burkitt lymphoma: ½ are curable with 3-6 doses of a single agent chemo (cyclophosphamide)
- WHO Essential Medicine List Updated in May 2015
  - 16 new cancer drugs added
  - Help policy makers drive down the cost
    - HIV ARVs
Supply and Cold Chain Challenges

• Many cancers require different drugs
  – Availability of necessary drugs
  – Ex: Patient with Hodgkin’s Lymphoma has an 80% chance of cure if:
    • All 4 drugs at full dose, on schedule, for all 6 cycles
      – Marked decrease in cure if any 1 of the above is lacking

• Supportive care
  – Access to pain medications, anti emetics, etc
  – Palliative care
Abandonment of Therapy

• Along with refusal = the major cause of therapeutic failure in up to 50-60% of cases$^4$
  – Socioeconomic factors
    • Education on importance of entire regimen
      – ALL: therapy can be 3 years in duration with home daily oral chemotherapeutics
    • Cost: primary and secondary
      – Parental lost wages, familial burden
      – Adequate nutrition
Follow up

• Socioeconomic resources
  – Distance from home
  – Travel money
  – Accommodation if > day visit
  – Lost income, who is caring for family?

• Education
  – Importance of surveillance if child is well appearing, especially given burden on family to attend
Stepwise Process to Developing Programs

Level 1
- Early diagnosis
- Public awareness
- Early referrals
- Education
- Basic treatment
- Guidelines
- Palliative care

Level 2
- “Cure the curable” Build infrastructure
- Improve diagnosis
- Maximize twinning
- Palliative care

Level 3
- Modern treatments
- Multidisciplinary
- Advanced technology
- Palliative care

Level 4
- National/regional center of excellence

% Survival

Research
Collaborations

• Particularly for pediatric cancer, the numbers are small enough
  – Global bargaining power to policy change
    • WHO
    • Union Against Cancer Control
  – Combining efforts with adult counterparts
  – “Twinning” with HIC center for resources/technical support
  – Resource Adapted Protocols and Implementation Research
    • SIOP PODC protocols
    • Global clinical trials
Summary

• An understanding that that the majority of pediatric cancer diagnosed occurs in middle or low income countries

• An overview of challenges of diagnosing and delivering cancer care in resource constrained settings

• True impact in LRS depends on a few key factors accomplished through collaborations:
  – Resources & intellect
References


Questions??