

Cancer Care in Developing Countries: An Underdeveloped Public Health Priority

Why a Partnership between:

Partners in Health
and
Dana-Farber Cancer Institute

Lawrence N Shulman, MD

Chief Medical Officer
Senior Vice President for Medical Affairs
Director of Network Development
Dana-Farber Cancer Institute
Brigham and Women's Hospital
Harvard Medical School

Because:

- **PIH is expert in developing successful and robust care delivery systems in very needy sites, but lacks specific cancer expertise**
- **Dana-Farber knows cancer, but not care delivery in developing countries**

A collaborative care model: The Dana-Farber Cancer Institute, BHW and PIH

- **Medications** not available in-country provided by DFCI
 - exploring long-term supply solutions
 - price negotiating, South-South supplied generics
- **Expert consultations** provided in timely fashion and free-of-charge by formal clinical advisory group
 - Internet-based case presentation, discussion
 - Scalable, simple protocol development
- **Pathology** of tumor tissues provided free-of-charge by Brigham and Women's Hospital
 - Develop models for in-country based sample preparation with electronic transmission/analysis
- **High-quality care** delivered on-site without the physical presence of an oncologist

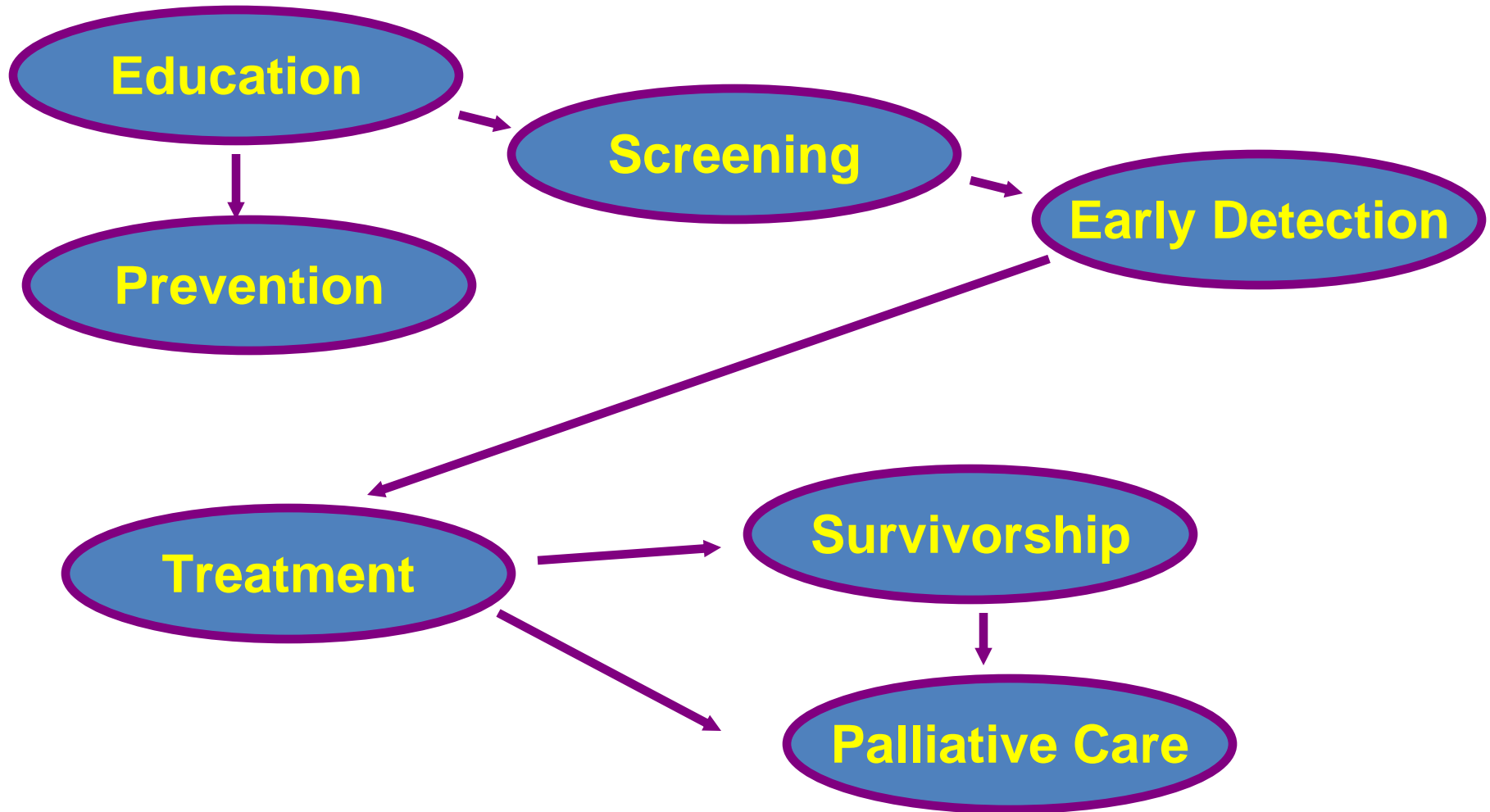


Dana-Farber Cancer Institute

Mission Statement

The mission of Dana-Farber Cancer Institute is to provide expert, compassionate care to children and adults with cancer while advancing the understanding, diagnosis, treatment, cure, and prevention of cancer and related diseases. As an affiliate of Harvard Medical School and a Comprehensive Cancer Center designated by the National Cancer Institute, the Institute also provides training for new generations of physicians and scientists, *designs programs that promote public health particularly among high-risk and underserved populations, and disseminates innovative patient therapies and scientific discoveries to our target community across the United States and throughout the world.*

“Navigation” Through The Continuum of Cancer Care



Some Thoughts

- **The paradigms for prevention, screening, diagnosis and treatment might be very different for different countries and socio-economic environments**
- **For cancer treatments to be effective, they must be administered in the context of a functional health system, and supportive environment (safe water, adequate nutrition, social support, etc) – Cancer programs and oncologists must partner with care delivery programs**
- **There must be adequate surgery and pathology**
- **There must be a sustainable, affordable drug supply**
- **Resources should be focused on disease states where a human impact can be made**

Delivering cancer care in a rural district hospital



- **Integration**
 - prevention, screening, treatment
- **Diagnostics**
 - pathology, imaging
- **Collaborations**
 - National referral centers
 - Expert consultations
- **Medications**
- **Training**
 - Drug administration, monitoring
 - Side effect management
- **Social support**

Principles of Cancer Care at PIH Sites

1. **Development of a cancer program within the context of existing PIH programs in a horizontal rather than vertical manner.**
2. **Development of cancer services administered by physicians, nurses and other healthcare workers at PIH sites and in the community, without on-site oncologists or hematologists but with the back-up of specialists via electronic communication.**
3. **Expansion of the Acompagnateur Model and other supportive services to cancer patients.**
4. **Development of a Prioritization Document which will direct resources to where they are likely to make the greatest difference.**
5. **Development of specific disease-based protocols to direct interventions and care based on #4.**
6. **Development of a supply chain for affordable drugs, vaccines and other critical services.**
7. **Development of a research agenda and infrastructure specifically designed to address questions applicable to cancer care in these settings**

Principles of Cancer Care at PIH Sites

- 1. Development of a cancer program within the context of existing PIH programs in a horizontal rather than vertical manner.**
 - The PIH model of care has been successful in both raising the socio-economic climate of a region, and in creating a healthcare system that has proved effective at treating complex infectious diseases**

Principles of Cancer Care at PIH Sites

- 2. Development of cancer services administered by physicians, nurses and other healthcare workers at PIH sites and in the community, without on-site oncologists or hematologists but with the back-up of specialists via electronic communication.**
 - There is unlikely to be a substantial oncology workforce in many of these areas, and the concept of task shifting, based on training and back-up has been an effective approach in a number of areas**
 - PIH in partnership with DFCI has proved this can be done safely and effectively**

Principles of Cancer Care at PIH Sites

- 3. Expansion of the Acommpagnateur Model and other supportive services to cancer patients.**
 - Community health workers who provide care, social and psychological support. This has been a key component of the success of PIH programs in infectious disease**
 - Distances can be far and transportation non-existent, requiring programs such as this to follow and care for patients**
 - POSER – Program on Social and Economic Rights – key to developing a supporting economic and social environment without which care provision is often unsuccessful**

Social Support: A cornerstone of care

- **Accompagnateur: companionship** through treatment, true palliation
 - Home visits, clinic visits
 - Fevers: provide antibiotics, contact hospital
 - Adverse effects: hydration, antiemetics, analgesics
- Food
- Housing
- Transportation
- Family support



Principles of Cancer Care at PIH Sites

- 4. Development of a Prioritization Document which will direct resources to where they are likely to make the greatest difference.**
 - With limited resources, thoughtful decisions must be made as to where to direct those resources with the goal of achieving the most good for the most number of patients**
 - Treatment paradigms may intentionally differ from those in developed countries**

Principles of Cancer Care at PIH Sites

- 5. Development of specific disease-based protocols to direct interventions and care based on #4.**
 - A distinct set of disease-based protocols will result in maximizing treatment benefit, by setting guidelines for care to be followed at all sites**
 - These protocols will also allow for needed research to measure the effectiveness of these efforts, and determine opportunities for improved care and outcomes in the**

Principles of Cancer Care at PIH Sites

- 6. Development of a supply chain for affordable drugs, vaccines and other critical services.**
 - This is critical for the success of any of these programs, and has been a mainstay of the success of the infectious disease treatment programs operated by PIH**
 - This will be more difficult to do because of the uncertainty of drug supply demand, but there will be a broad effort launched at this conference**
 - Most drugs needed for cancer treatment are off-patent and therefore potentially affordable if appropriate contracts can be arranged**

Principles of Cancer Care at PIH Sites

- 7. Development of a research agenda and infrastructure specifically designed to address questions applicable to cancer care in these settings**
 - These programs must be able to prove their effectiveness in being able to both deliver care, and improve the outcome of patients at these sites**
 - Research protocols should accompany every cancer initiative**

Cancers where we could make an impact (not all-inclusive list):

- Breast cancer – ***curable*** with early diagnosis and treatment
- Burkitt's lymphoma – ***curable*** with systemic, affordable chemotherapy
- Large cell lymphoma – ***curable*** with systemic, affordable chemotherapy
- Hodgkin's lymphoma – ***curable*** with systemic, affordable chemotherapy
- Kaposi's sarcoma – ***palliative*** treatment in face of HIV control
- Cervical cancer – ***prevention*** - HPV
- Hepatocellular cancer – ***prevention*** – Hepatitis viruses

Breast Cancer

- **Majority of patients with early-stage disease will be long-term survivors**
 - *Surgical resection required*
 - *For patients with estrogen receptor positive disease (many) taking hormonal therapy consistently for 5 years substantially improves survival*
 - *Medication supply and compliance critical*
- **Essentially all patients with advanced disease will die of their disease, and currently therapies only marginally prolong survival**
 - *So to impact on survival it is essential to diagnose and treat patients at an early stage of disease*
- **Having had a breast cancer, a woman has approximately a 1% per year chance of developing her next breast cancer**
 - *Continued follow-up vital*

Breast Cancer – the US

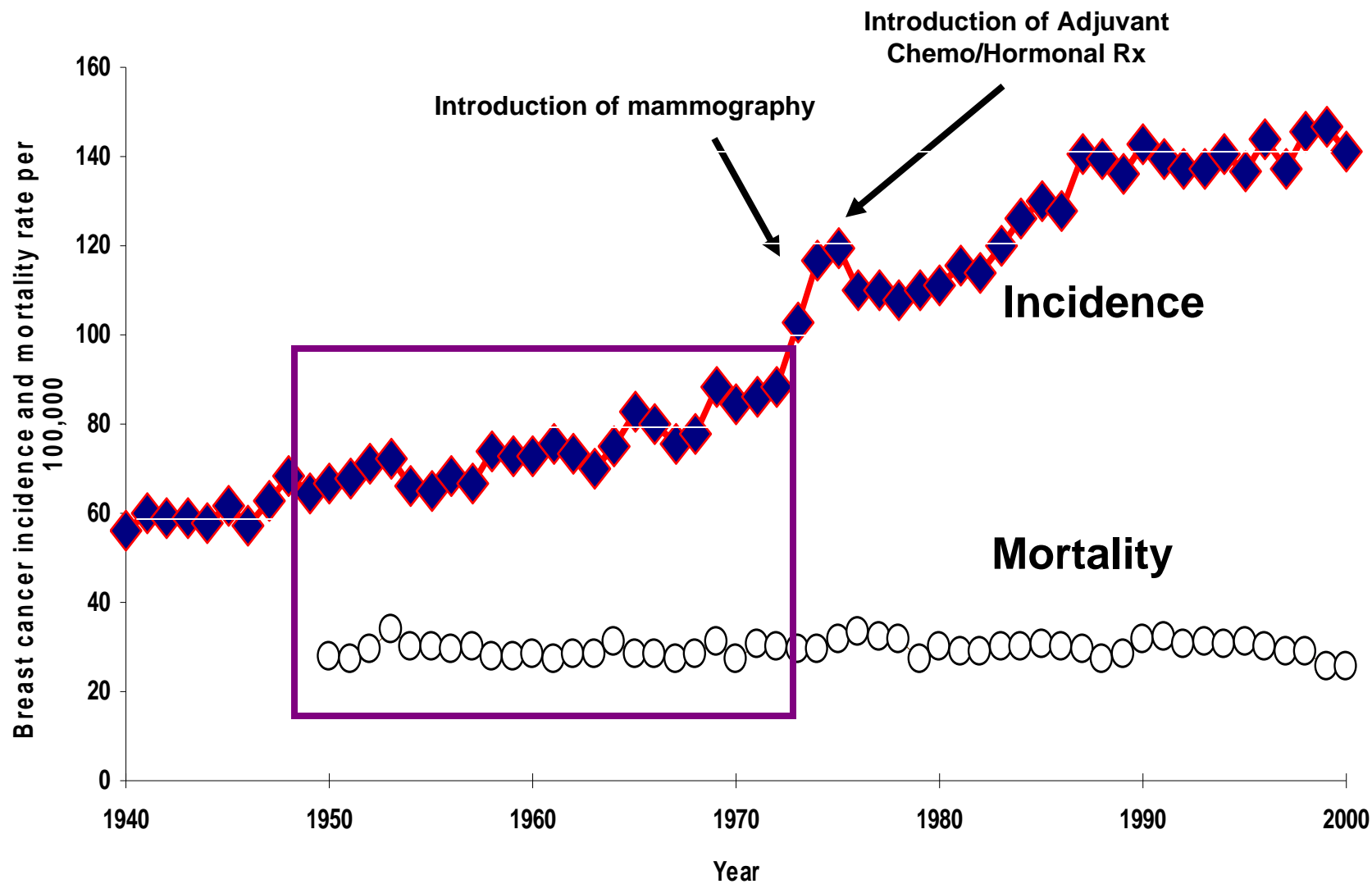
- **Early detection – mammography/MRI**
- **Adjuvant chemotherapy and hormonal therapies**
 - **Aromatase inhibitors – 2-4% improvement in disease-free survival, and less in overall survival**
 - **Trastuzumab – costly but significant benefit**
- **Chemotherapy and biologic therapies for patients with metastatic disease for incremental benefit**
 - **Bevacizumab – prolongation of tumor progression but no improvement in patient survival – all patients still die at same time**
 - **Costly but significant benefit, but without cure**

Breast Cancer

in another hypothetical location

- Early detection – awareness, education, self-exam, routine medical care and good *clinician* exam**
- Adequate surgical options**
- Tamoxifen for early stage disease that is estrogen receptor positive**
- Tamoxifen for metastatic disease that is estrogen receptor positive**
- ? Trastuzumab for patients with HER2 positive disease**

Breast Cancer Incidence and Mortality in the US



(SEER)

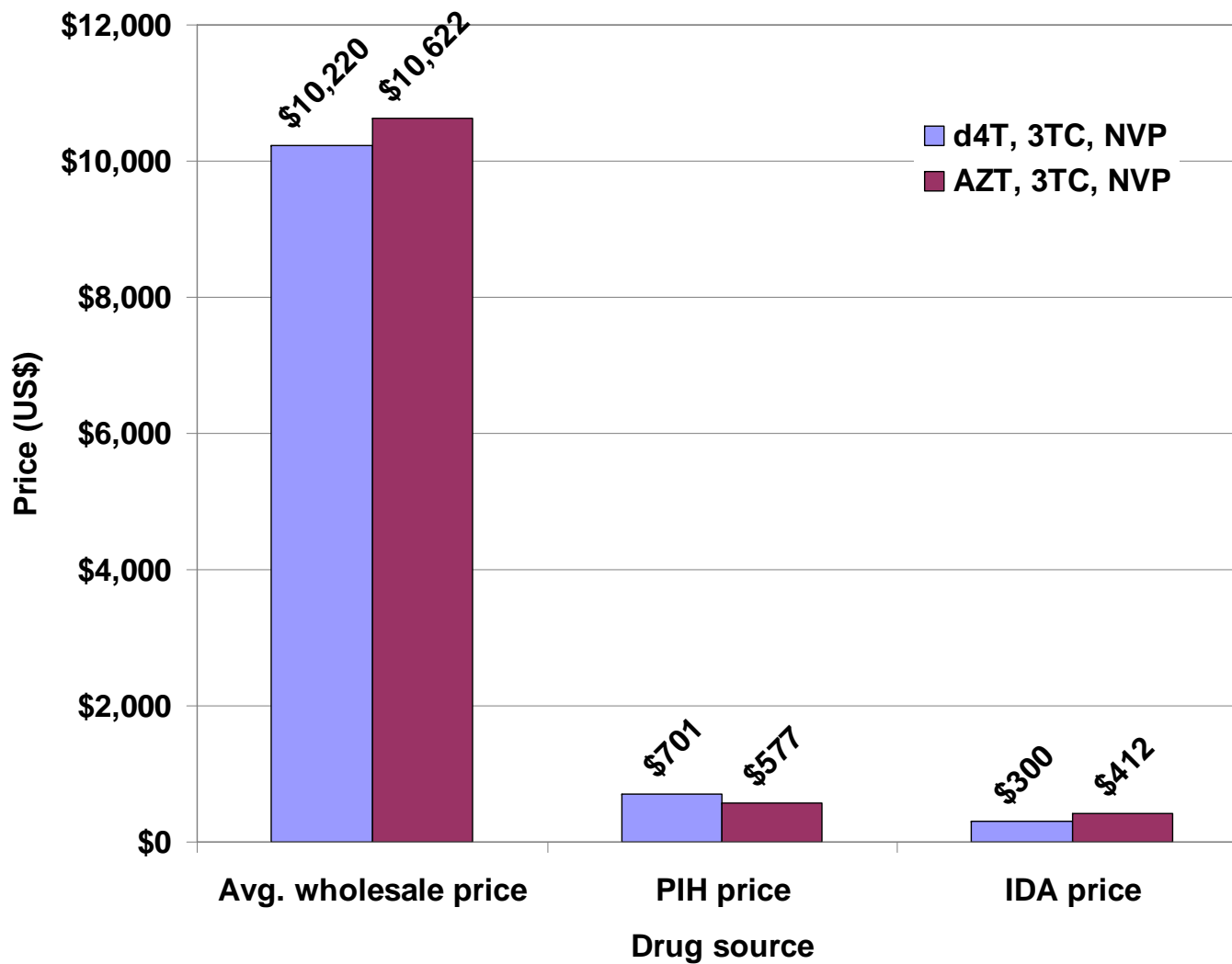
From Walter Willett

Tamoxifen vs Letrozole

DFCI cost (not patient charges)

- Tamoxifen = \$68 per year**
- Letrozole = \$1,220 per year**

Annual per-patient ART cost, 2002



Paclitaxel: A Pricing Model

Procurement source	Cost per 300 mg (\$US)	Cost per complete course	Percent cost reduction
Cimres (European global supplier)	\$1500	\$17,500	---
Dana-Farber/Boston (generic)	\$90	\$525	97%
India (generic)	\$70	\$408	97.7%

And with price negotiations?...



Therefore:

- We need to engage populations in health care directed at cancer education, prevention, early detection and treatment compliance**
- We need to prioritize how to use our resources for the greatest human gain**
- We need to support this work with solid care delivery systems (including surgery/pathology) and adequate nutritional, environmental and social systems – we should be creative in developing these systems**
- Oncologists and cancer programs need to partner with organizations and governments to provide care in areas without traditional cancer programs**
- Access to affordable drug therapies critical**

Will this work?

Initial Views: MDR-TB

“In developing countries, **people with multidrug-resistant tuberculosis usually die**, because effective treatment is often impossible in poor countries.”

- WHO 1996

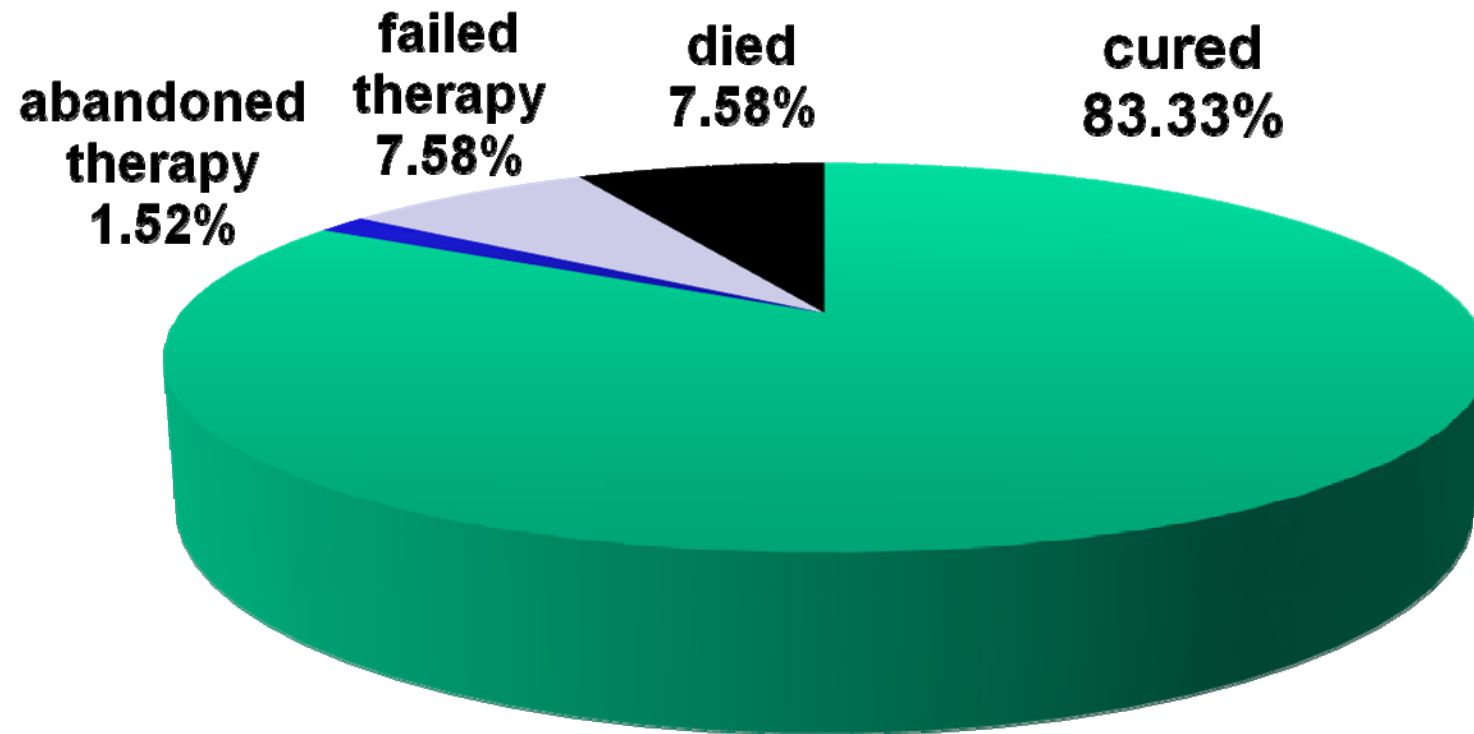
“**MDR TB is too expensive to treat in poor countries;** it detracts attention and resources from treating drug-susceptible disease.”

- WHO 1997



Outcomes in MDR TB patients in Lima, Peru receiving at least four months of therapy

All patients initiated therapy between August 1996 and February 1999





Integrating
prevention,
screening

...and treatment



Kaposi's Sarcoma: A Scalable Model

- Most common cancer in Africa
- Identifiable, treatable, common
- PIH-wide cancer program: Rwanda → Malawi → Haiti
- Less effective drugs → paclitaxel (DFCI support)
- Diagnostics: X-ray, stool guaiac, physical exam
- Monitoring: baseline liver, kidney function; blood counts prior to each dose

