

# Cancer stage presentation in LMIC

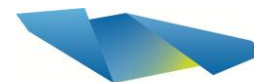
Dr Mei Ling Yap  
Prof Michael Barton

*1 Department of Radiation Oncology, Liverpool & Campbelltown Hospitals, Liverpool, NSW, Australia*

*2 University of New South Wales, Randwick, NSW, Australia*

*3 Ingham Institute for Applied Medical Research, Liverpool, NSW, Australia*

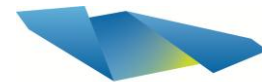
*4 Collaboration for Cancer Outcomes Research and Evaluation (CCORE), Liverpool, NSW, Australia*



Ingham Institute  
Applied Medical Research

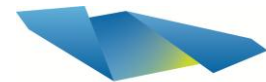
# Background

- The burden of cancer in LMIC is increasing
- There is a need to estimate the requirement for radiotherapy in LMIC
- Radiotherapy utilization (CCORE data) = 48.3% of all cancer patients in developed world
- Stage at presentation for cancers may differ in LMIC
  - Differences in stage presentation compared to developed world will change utilization rates



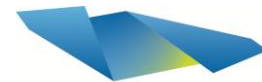
# Aims

1. Compile data on the stage at presentation for the main cancer subtypes in LMIC
2. Determine the effect of stage presentation on radiotherapy utilization rates for each main cancer subsite in LMIC
3. Determine how the different stage presentation in LMIC will influence survival benefit



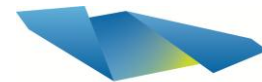
# Methods (1)

- Based on the existing CCORE model of optimal radiotherapy utilisation
- An indication for radiotherapy is defined as a clinical situation for which radiotherapy is recommended as *the treatment of choice*
  - radiotherapy has a superior clinical outcome compared to alternative treatment modalities (including no treatment) and where patient is suitable to undergo radiotherapy
- Indications for radiotherapy for each cancer site were derived from evidence-based treatment guidelines issued by major national and international organizations.
- Survival data was derived from highest level of evidence in the literature



# Methods (2)

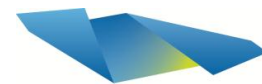
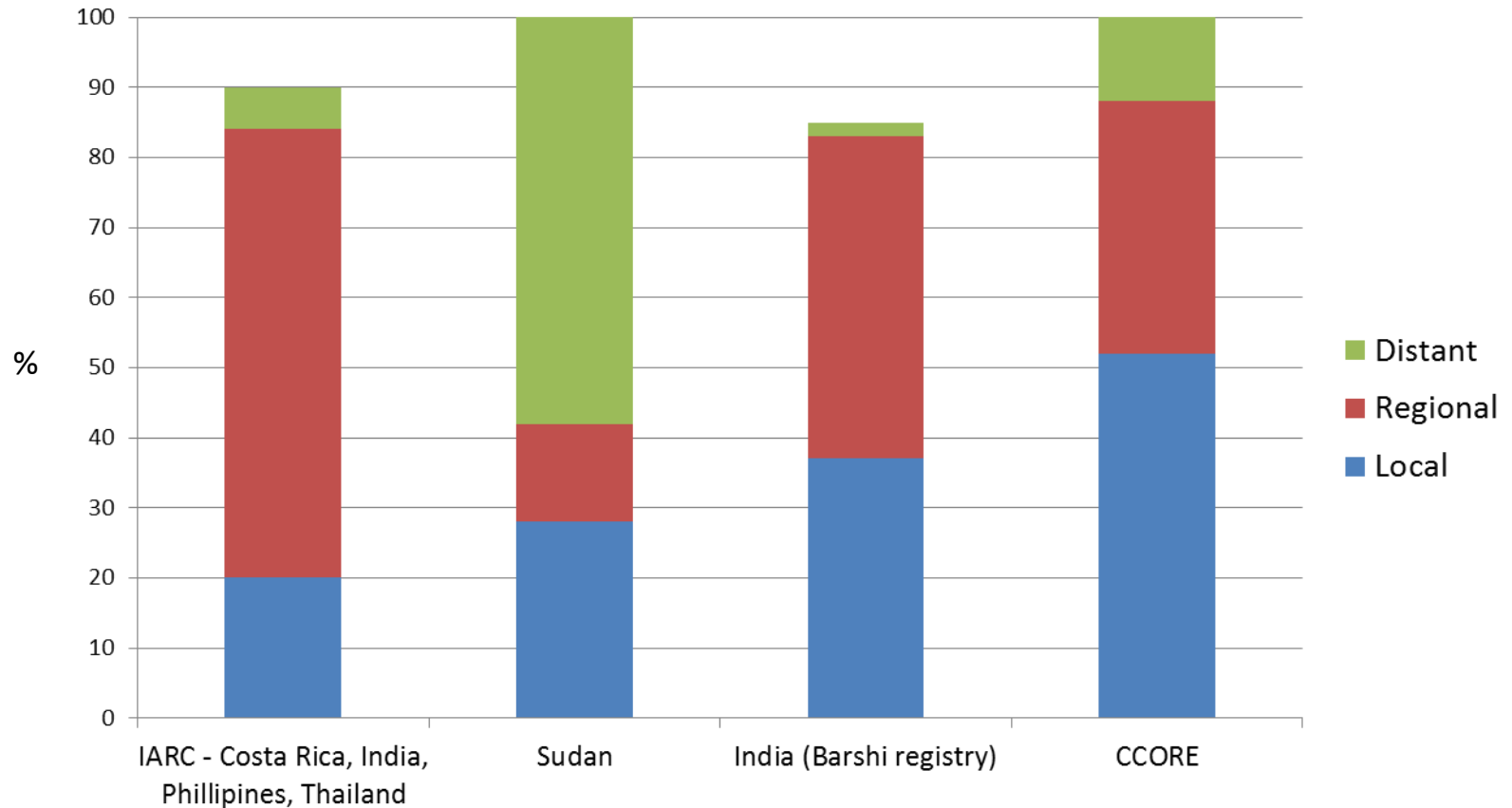
- TreeAge software version 3.5™ used to construct the RT utilisation trees
- For each branch a proportion of patients with that attribute was quantified (eg. stage, histology)
- Each branch of the tree ends in a “pay-off” of either ‘radiotherapy’ or ‘no radiotherapy’ as the final outcome
- Epidemiological data sourced from—
  - CCORE data based on Australian National or state databases or surveys where possible. Otherwise large citation databases
  - Staging data LMIC countries – literature search (pub med/Medline)
- In the survival model, each branch is assigned a survival benefit based on the literature



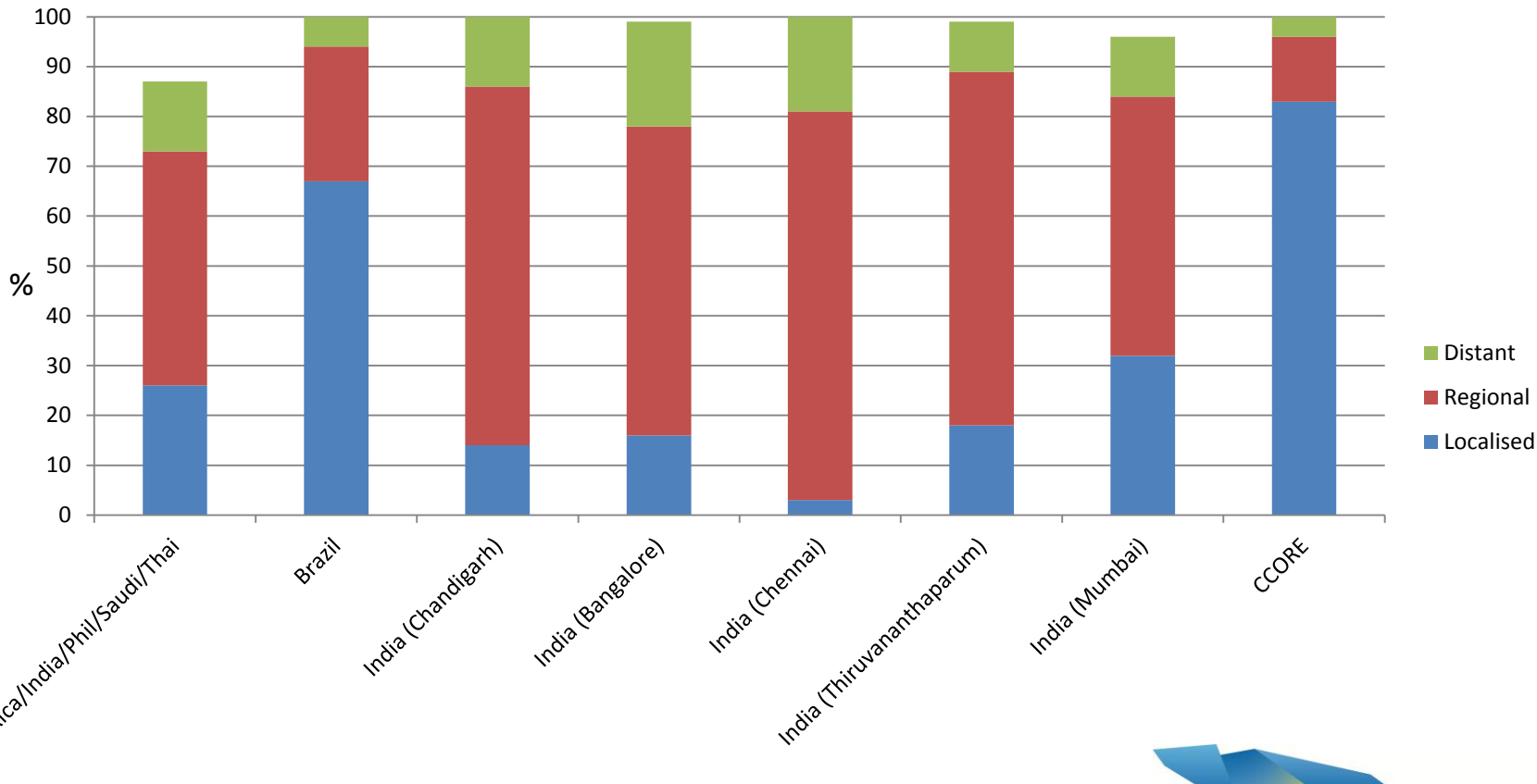
# Radiotherapy utilization - CCORE data

<b>SUBSITE</b>	<b>RADIOTHERAPY UTILIZATION RATE</b>
Bladder	47%
Brain	80%
Breast	87%
Cervix	71%
Head and Neck	74%
Liver	0%
Lung	77%
Lymphoma	73%
Prostate	58%
Rectum	60%
Stomach	27%
Uterus	38%

# CERVIX CANCER STAGE AT PRESENTATION

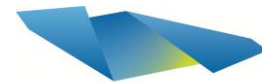
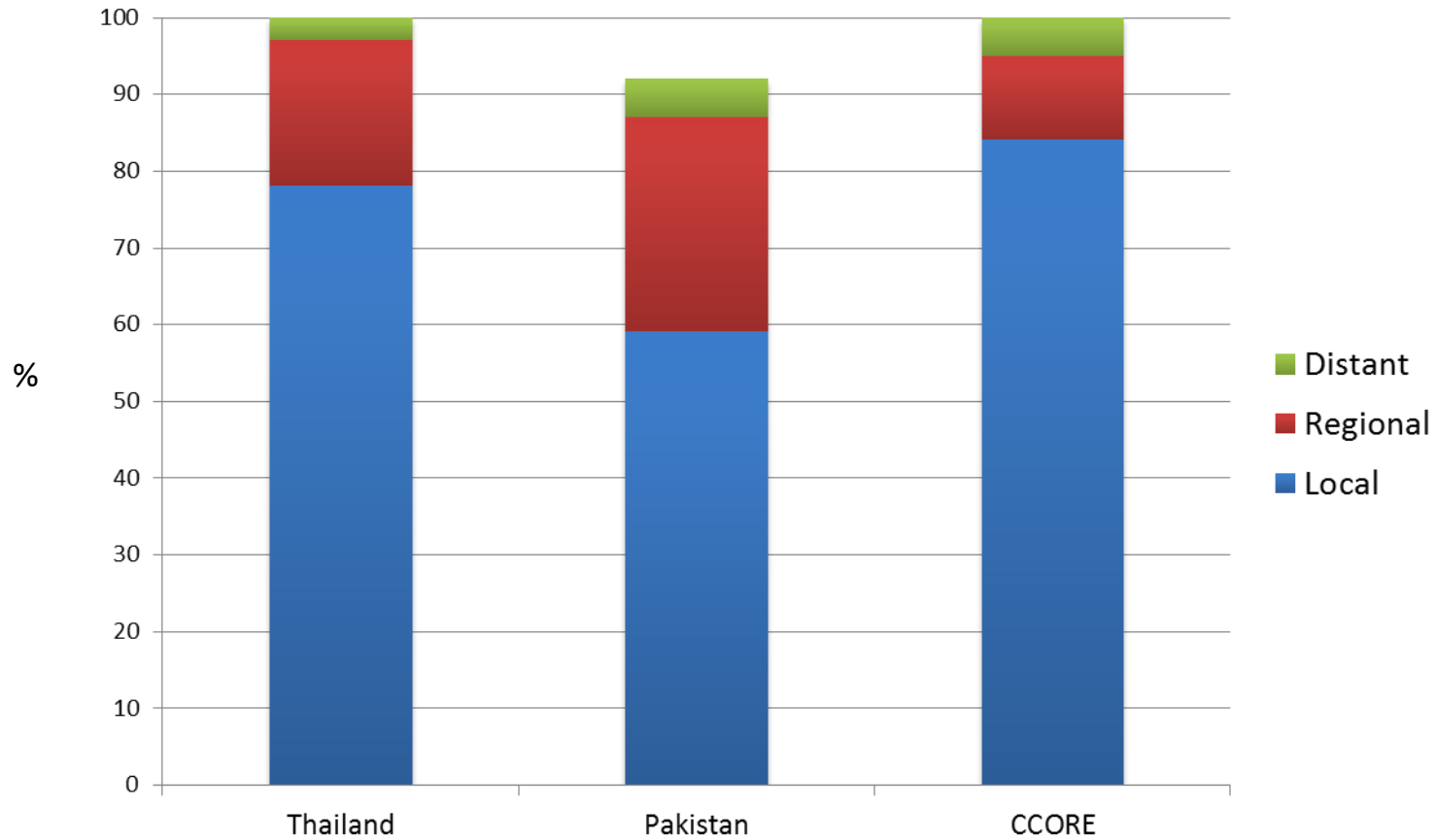


# BREAST CANCER STAGE AT PRESENTATION

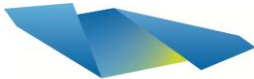
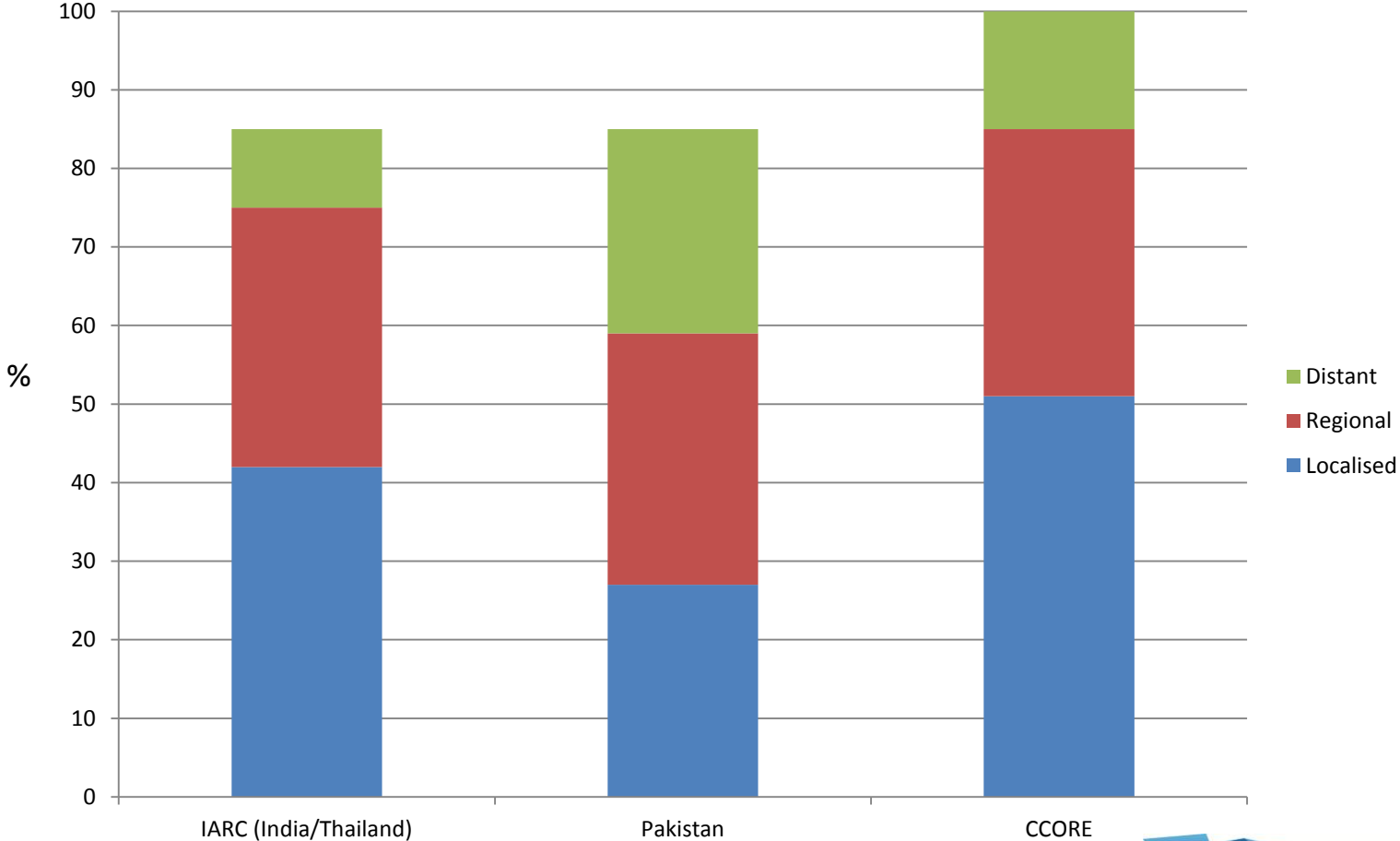




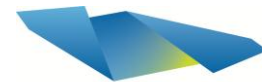
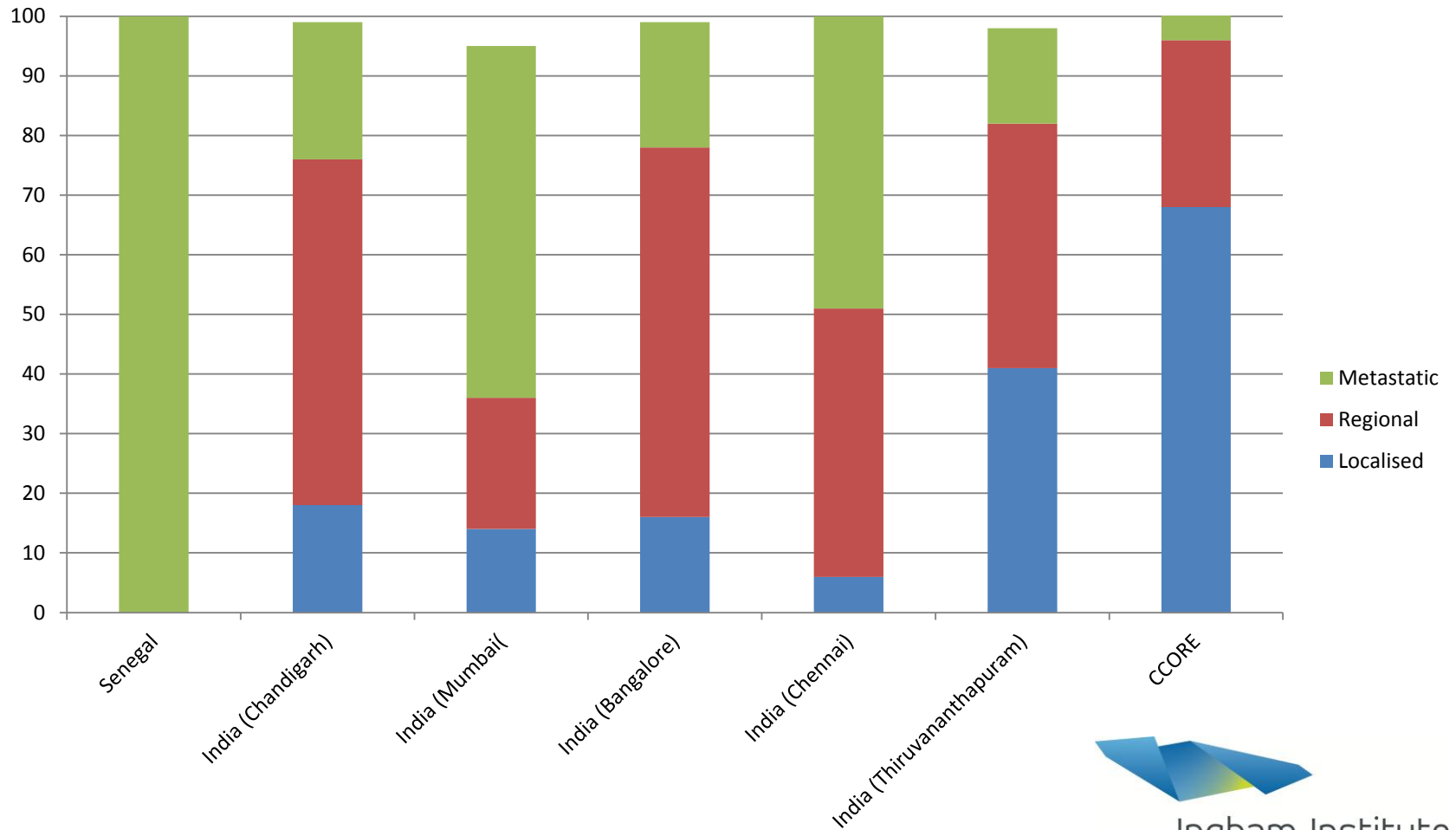
# UTERINE CANCER STAGE AT PRESENTATION



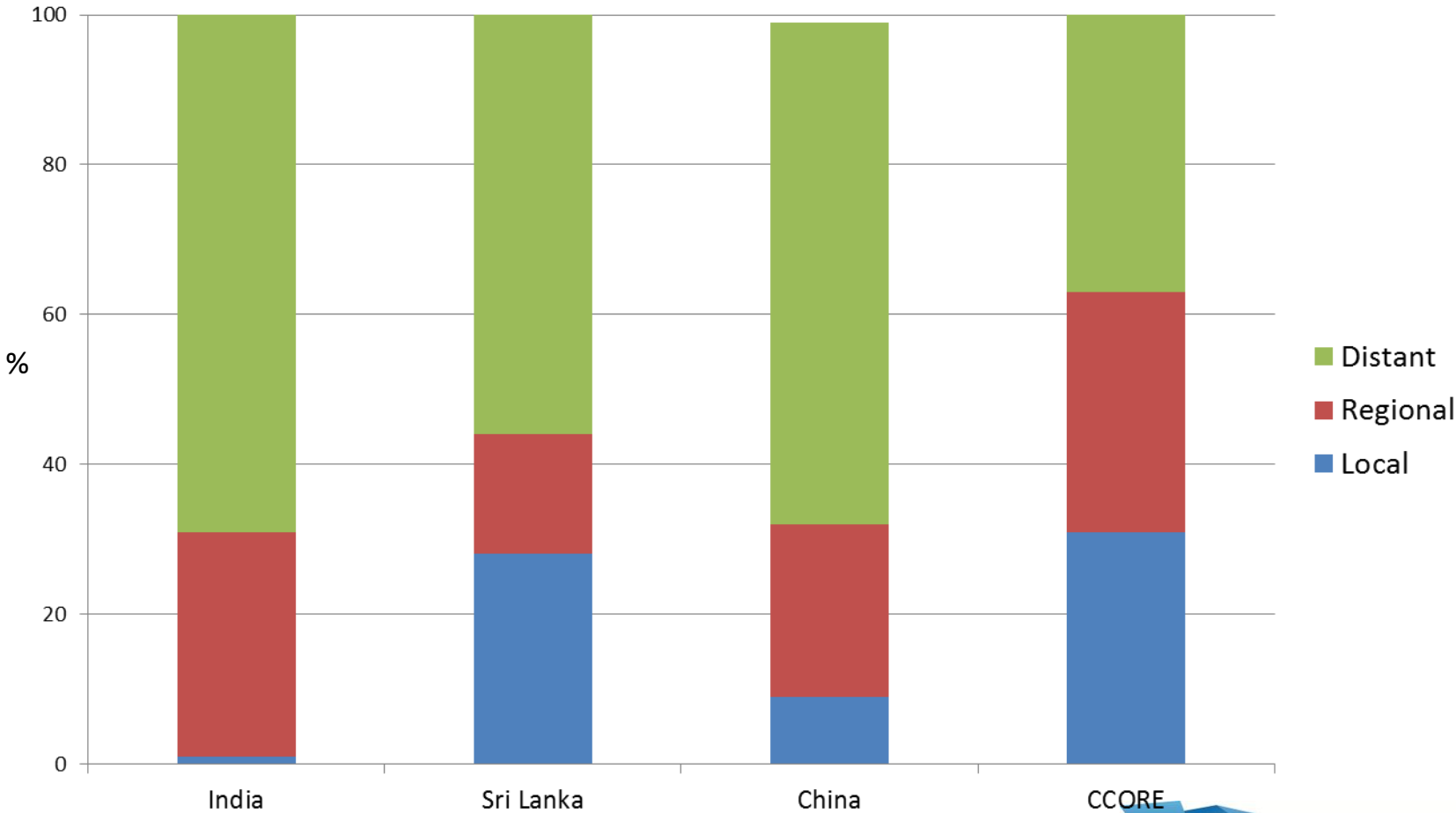
# BLADDER CANCER STAGE AT PRESENTATION



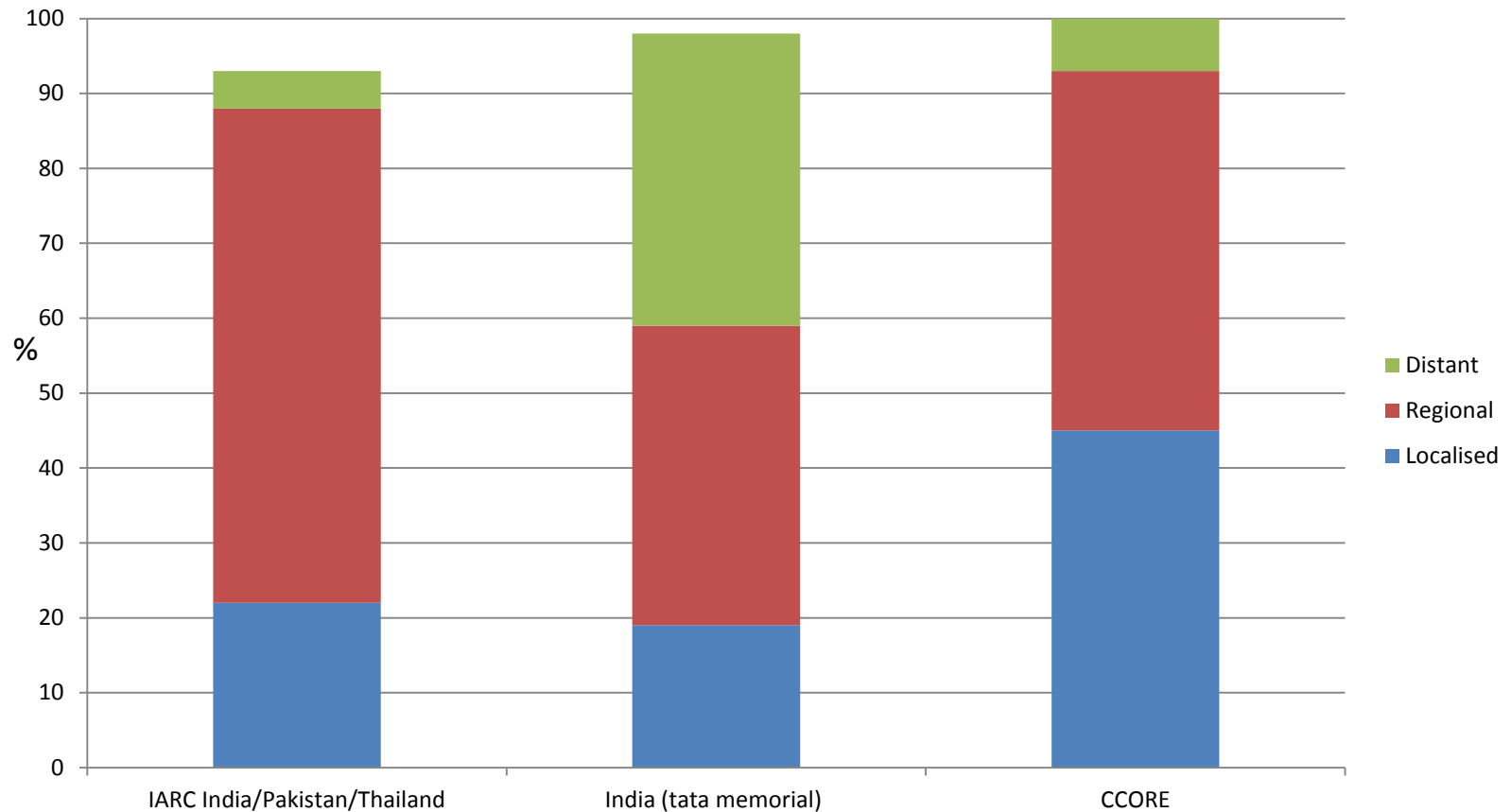
# PROSTATE CANCER STAGE AT PRESENTATION



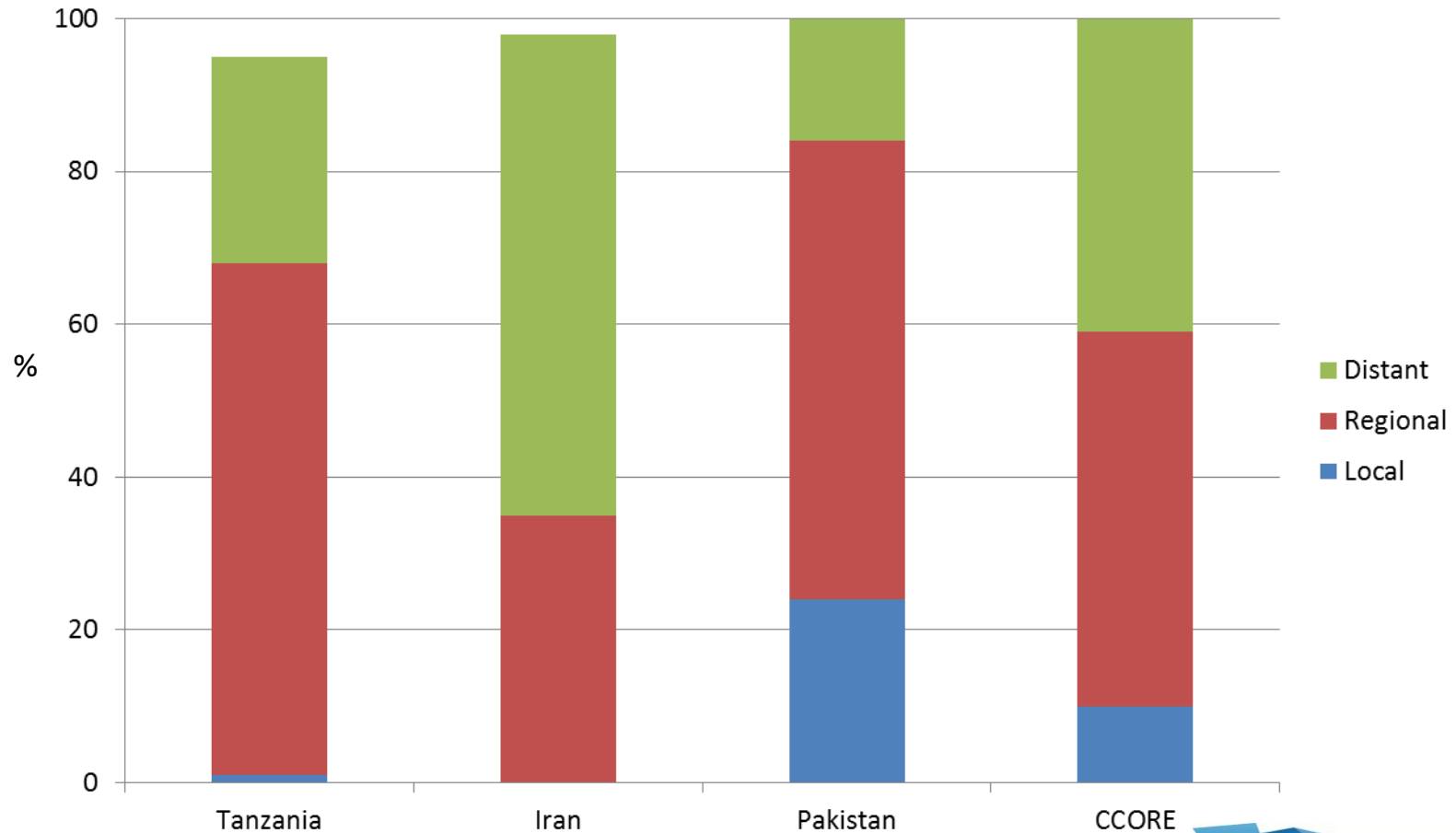
# LUNG CANCER STAGE AT PRESENTATION



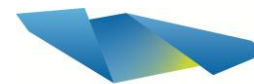
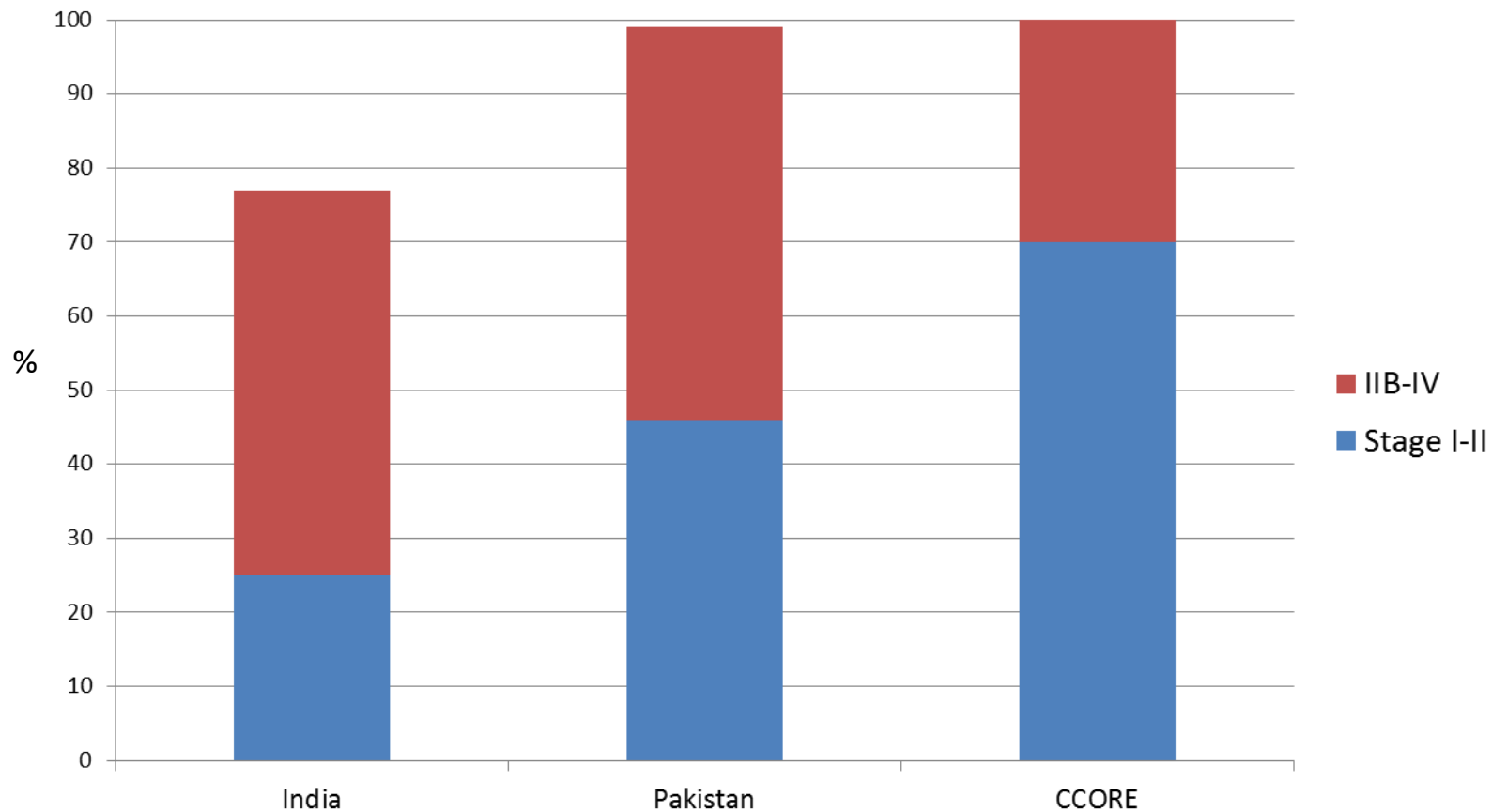
# HEAD & NECK CANCER STAGE AT PRESENTATION



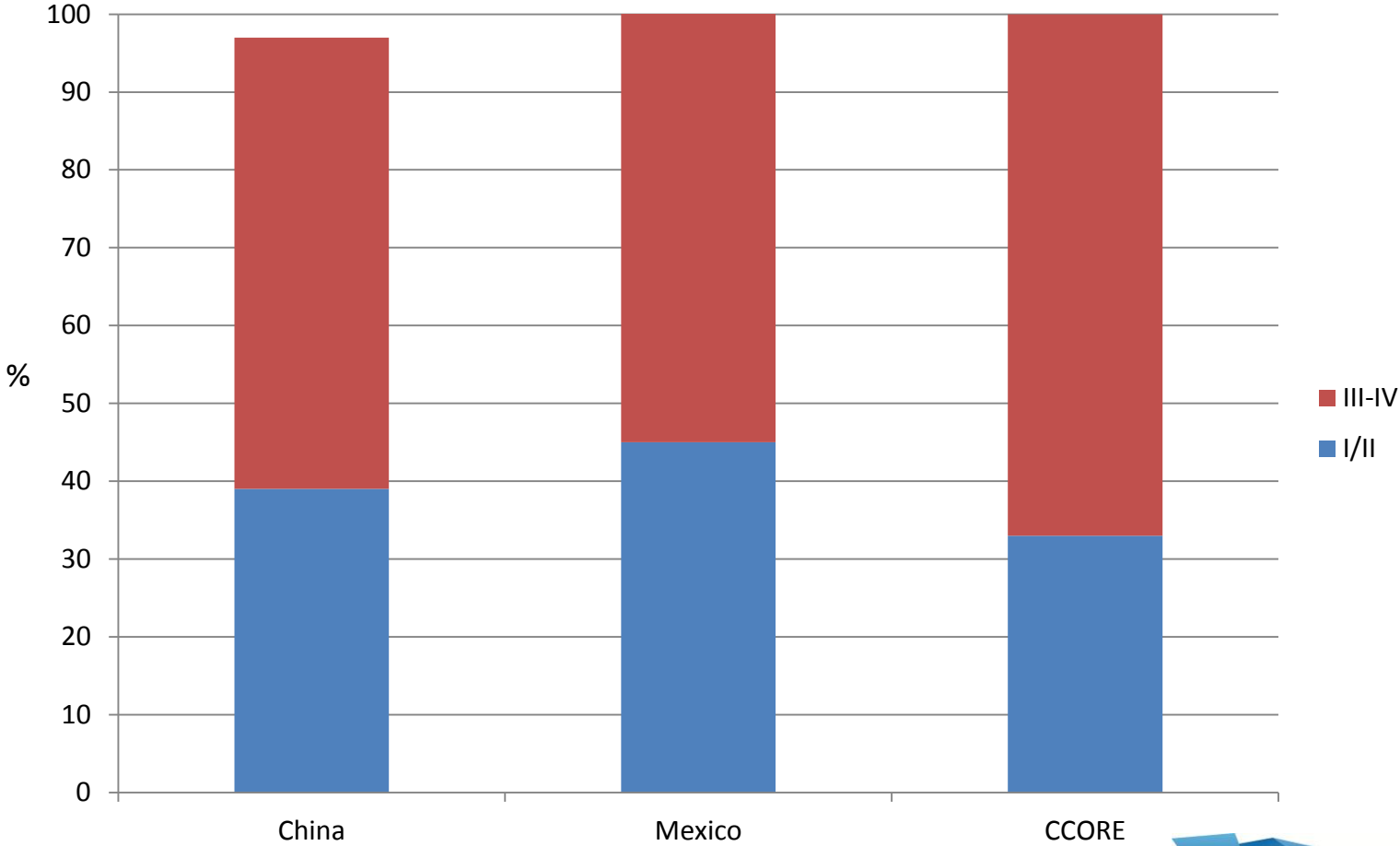
# STOMACH CANCER STAGE AT PRESENTATION



# HODGKIN'S LYMPHOMA STAGE AT PRESENTATION



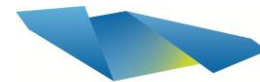
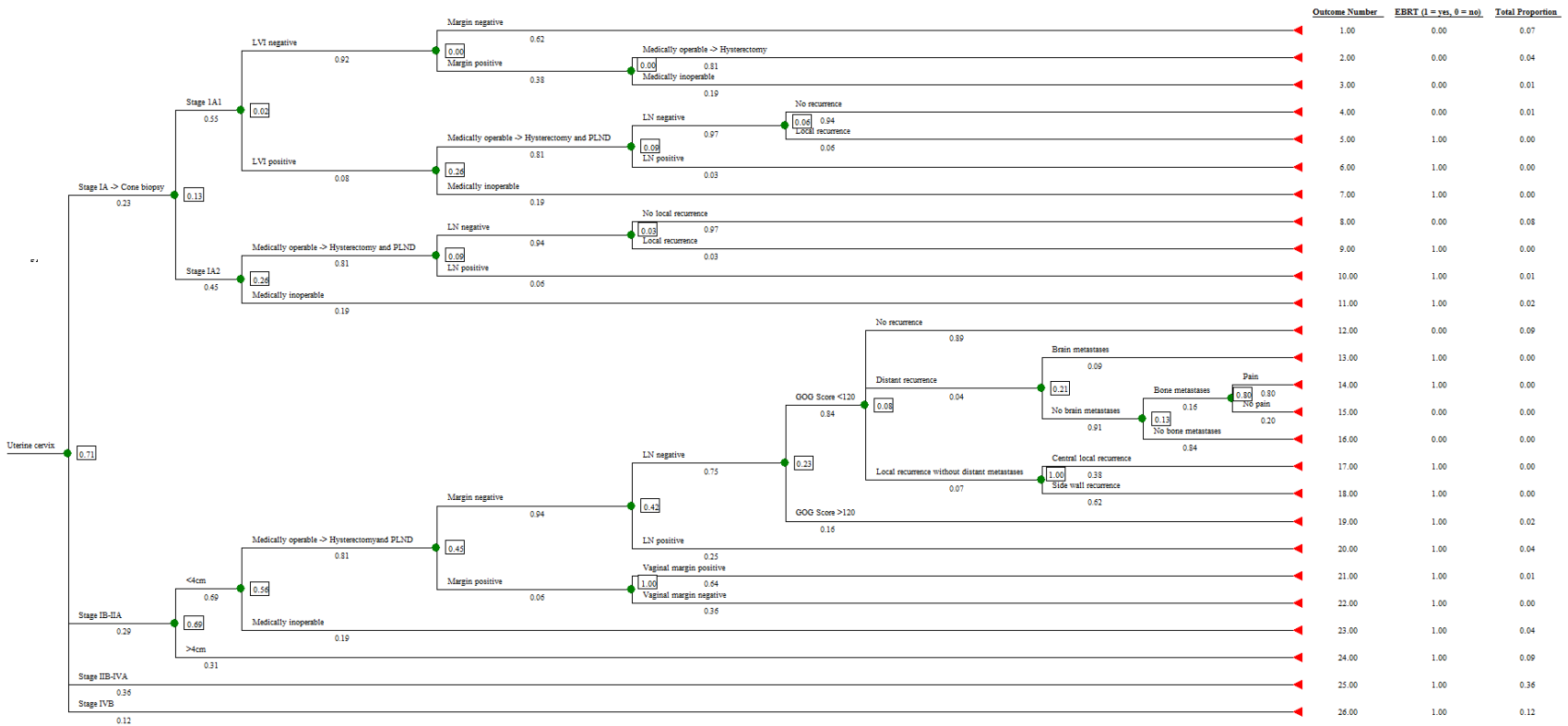
# NHL STAGE AT PRESENTATION



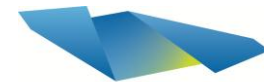
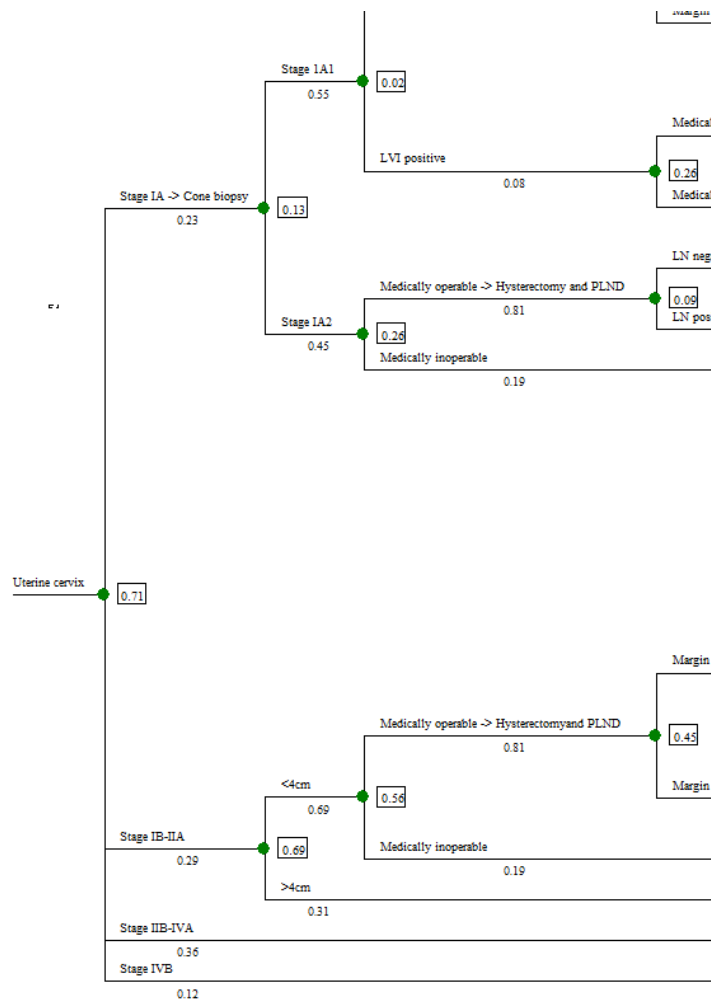


# Cervix Cancer – CCORE RTU

RTU = 71%

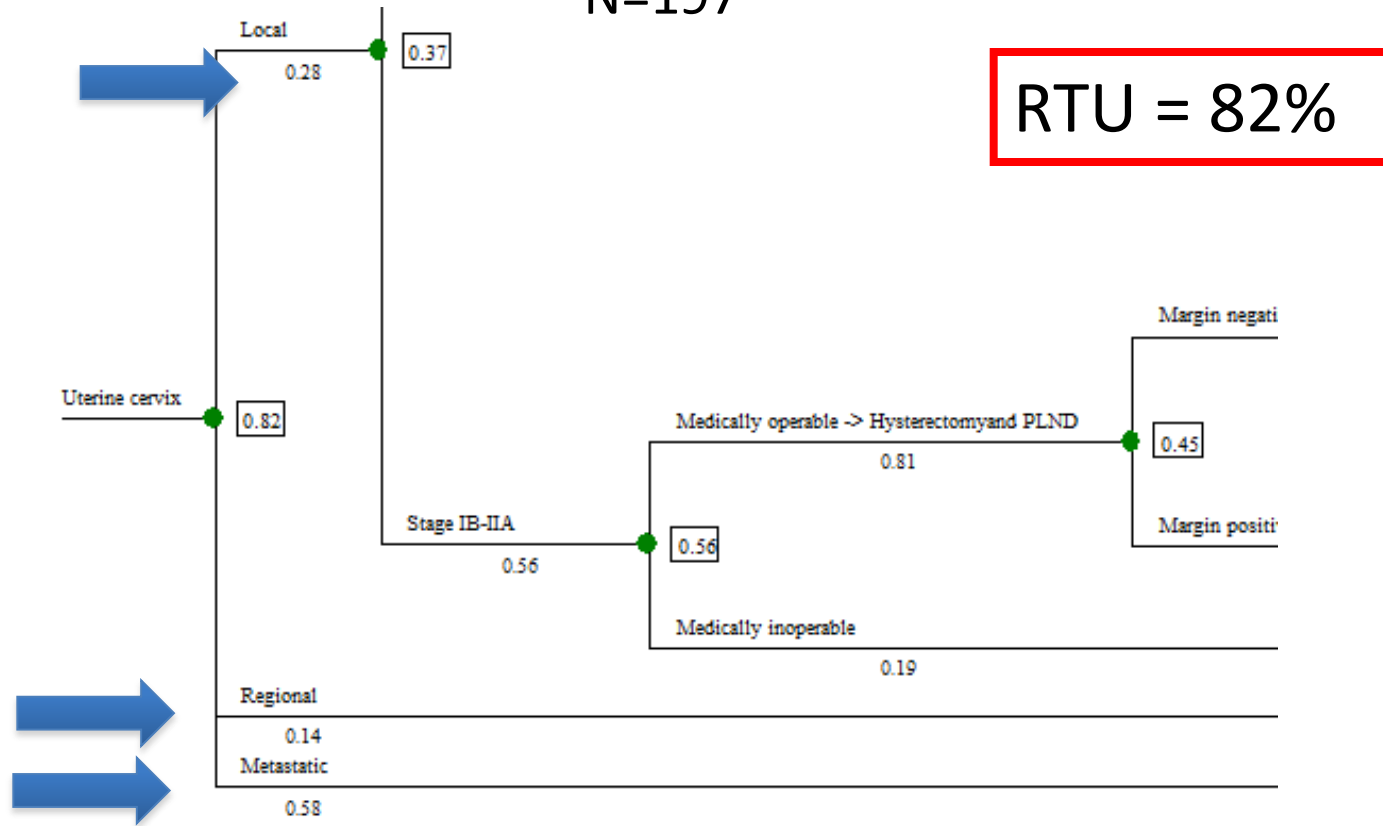


# CCORE stage distribution

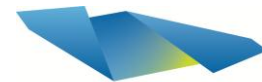


# Sudan – cervix cancer

N=197

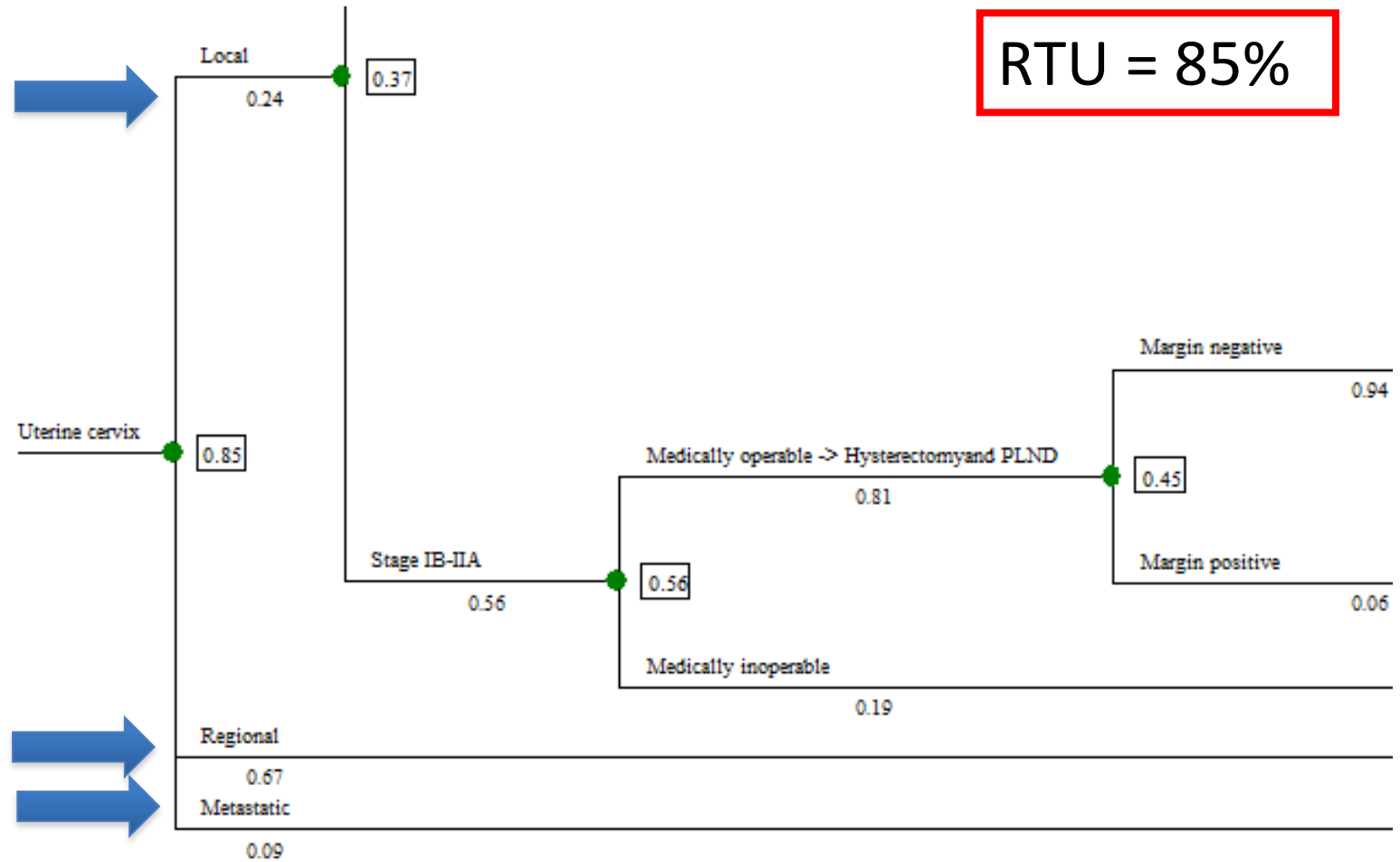


Assumption that 1A : 1B-IIA = developed world, utilization rate would be 82% (If assume 1:10, would increase to 86%)



# IARC (C.Rica/India/Phillipines/Thailand)

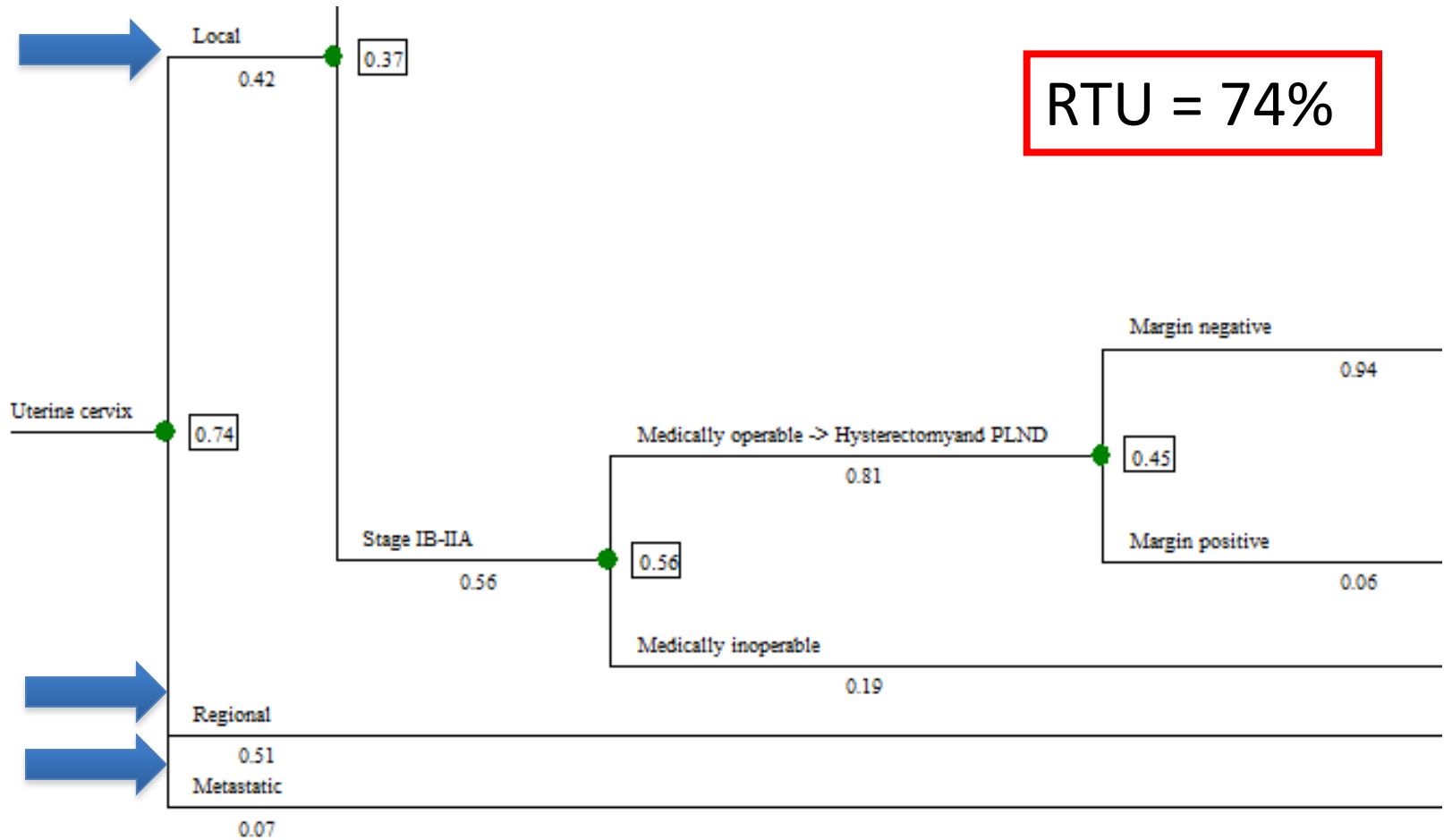
N=14536



# India (Barshi)

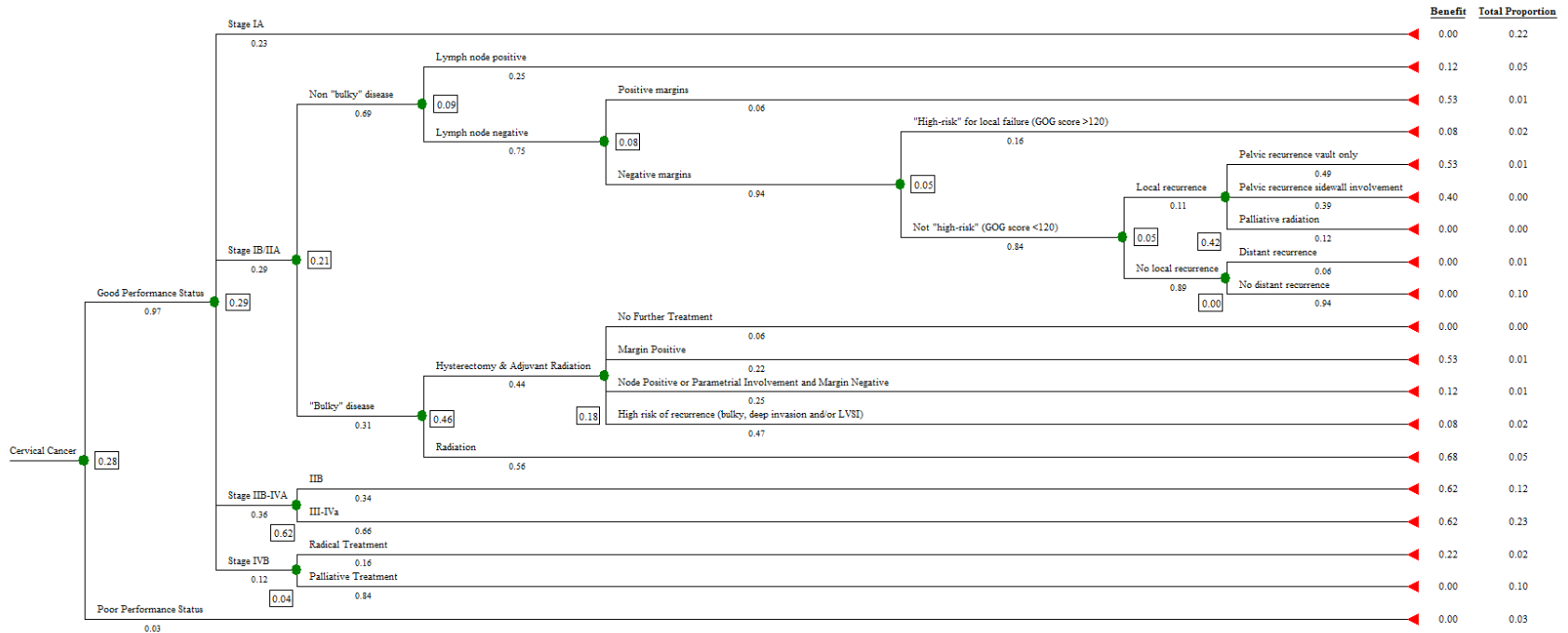
N=252

**RTU = 74%**

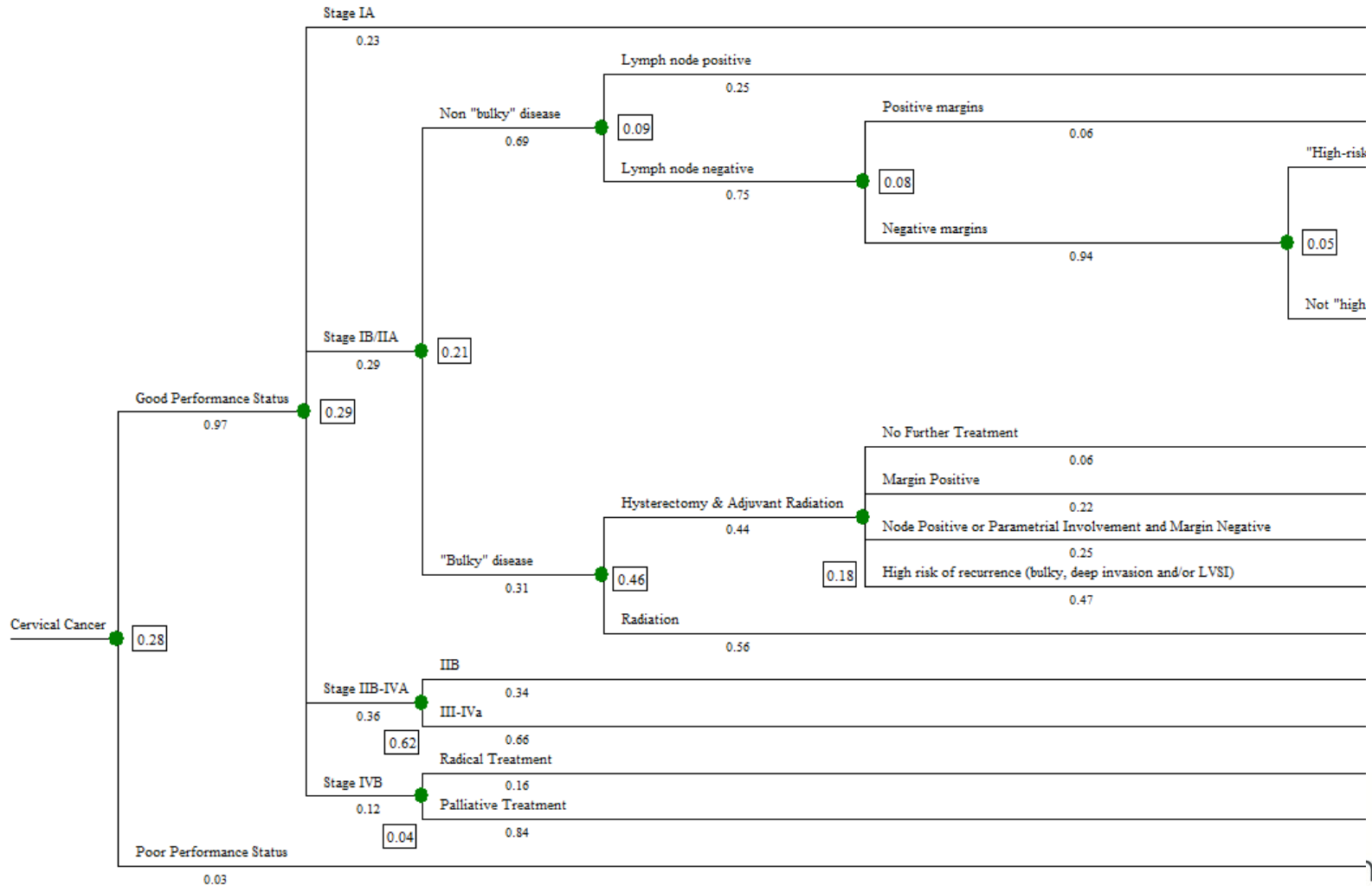


# Survival benefit RT- CCORE

**Benefit = 28%**

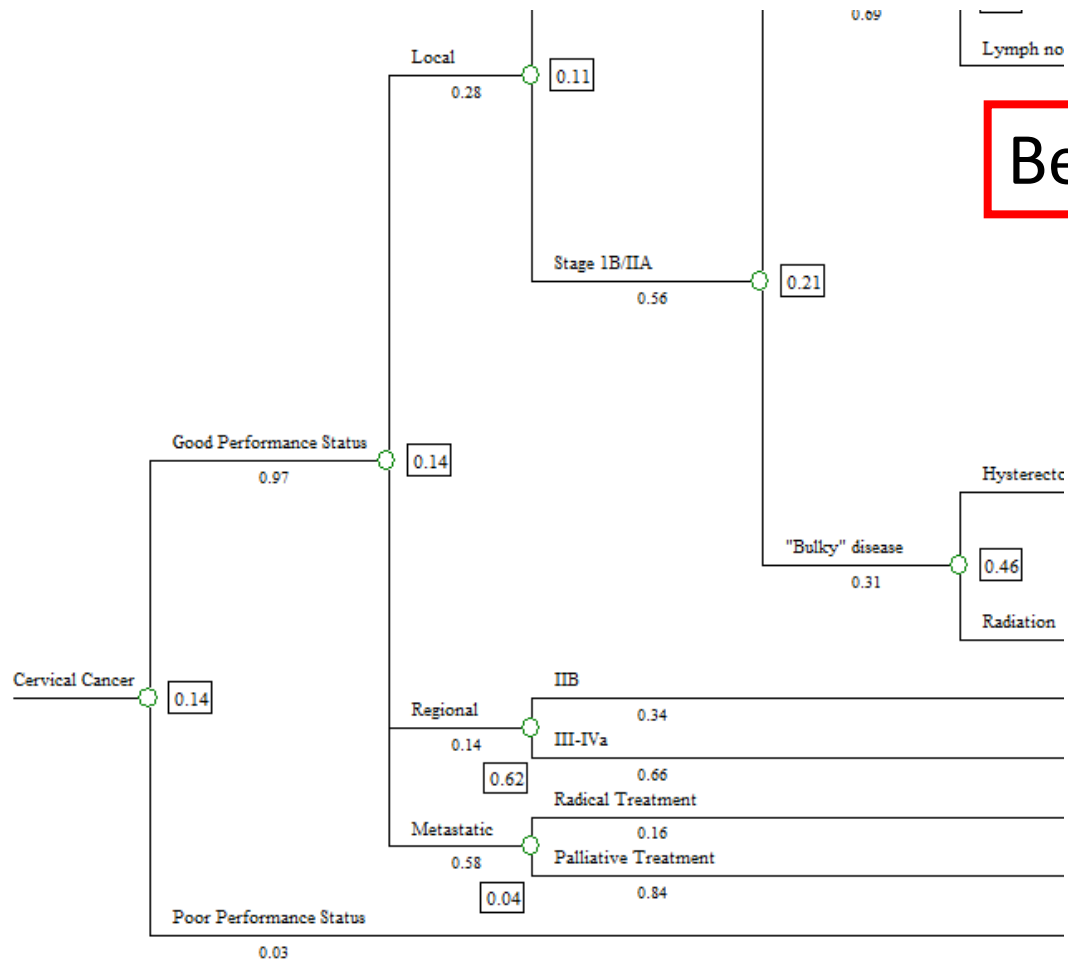


# Survival benefit from RT

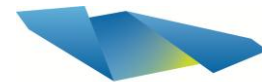


# Sudan – survival benefit

N=252

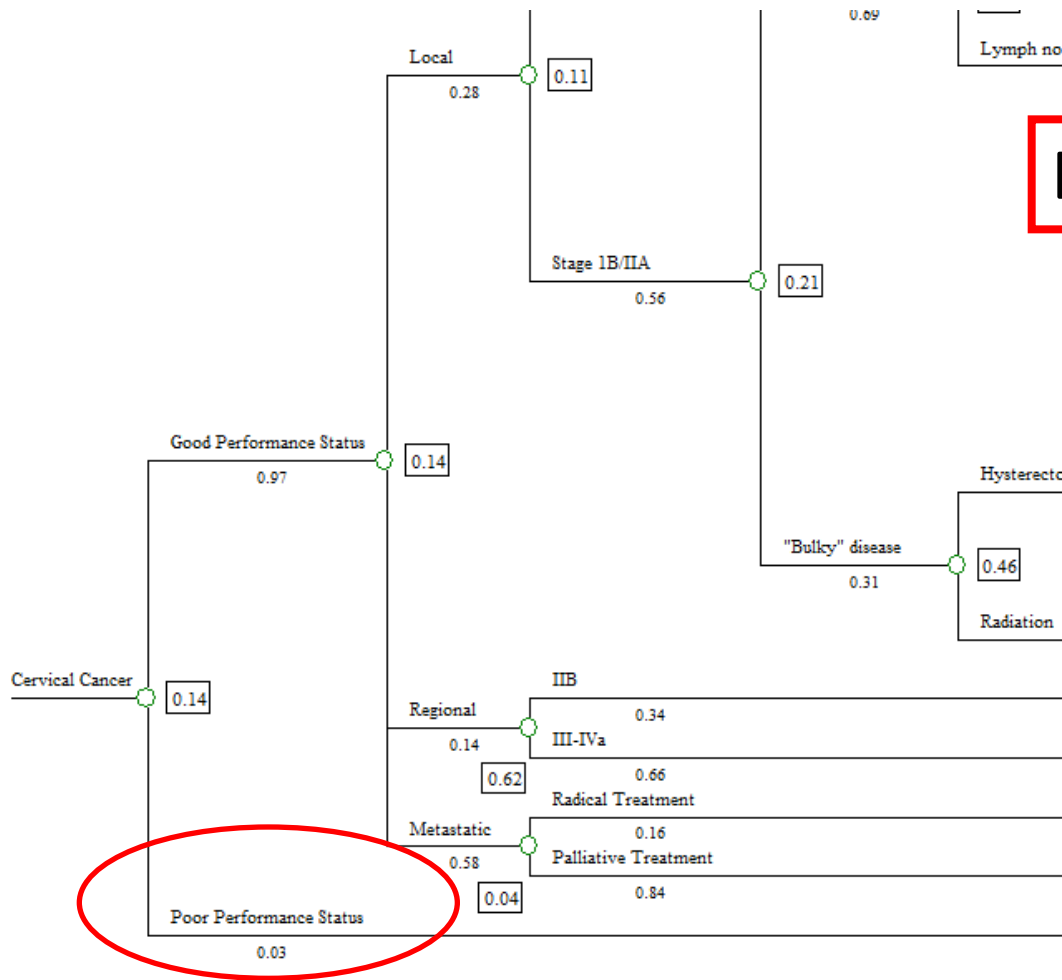


**Benefit = 14%**

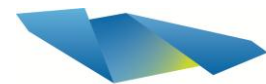




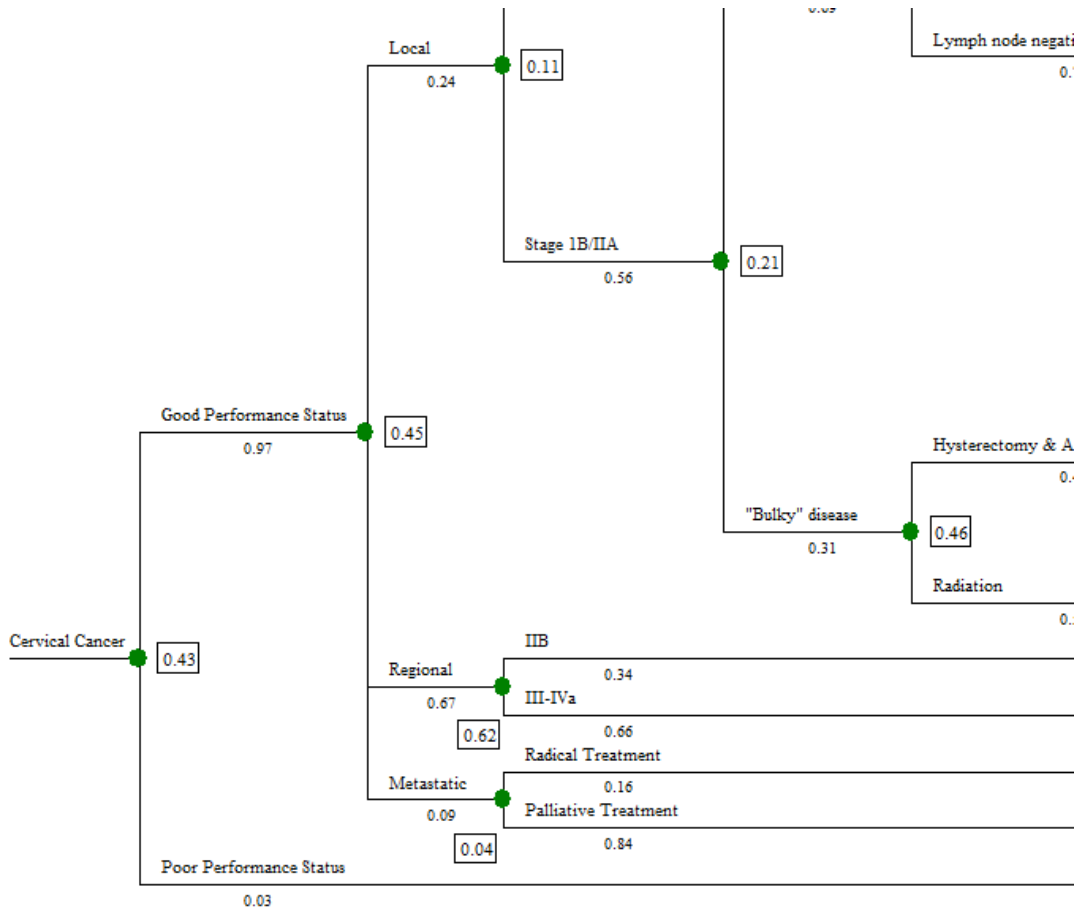
# Sudan – survival benefit



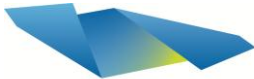
**Benefit = 14%**



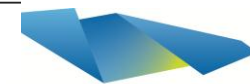
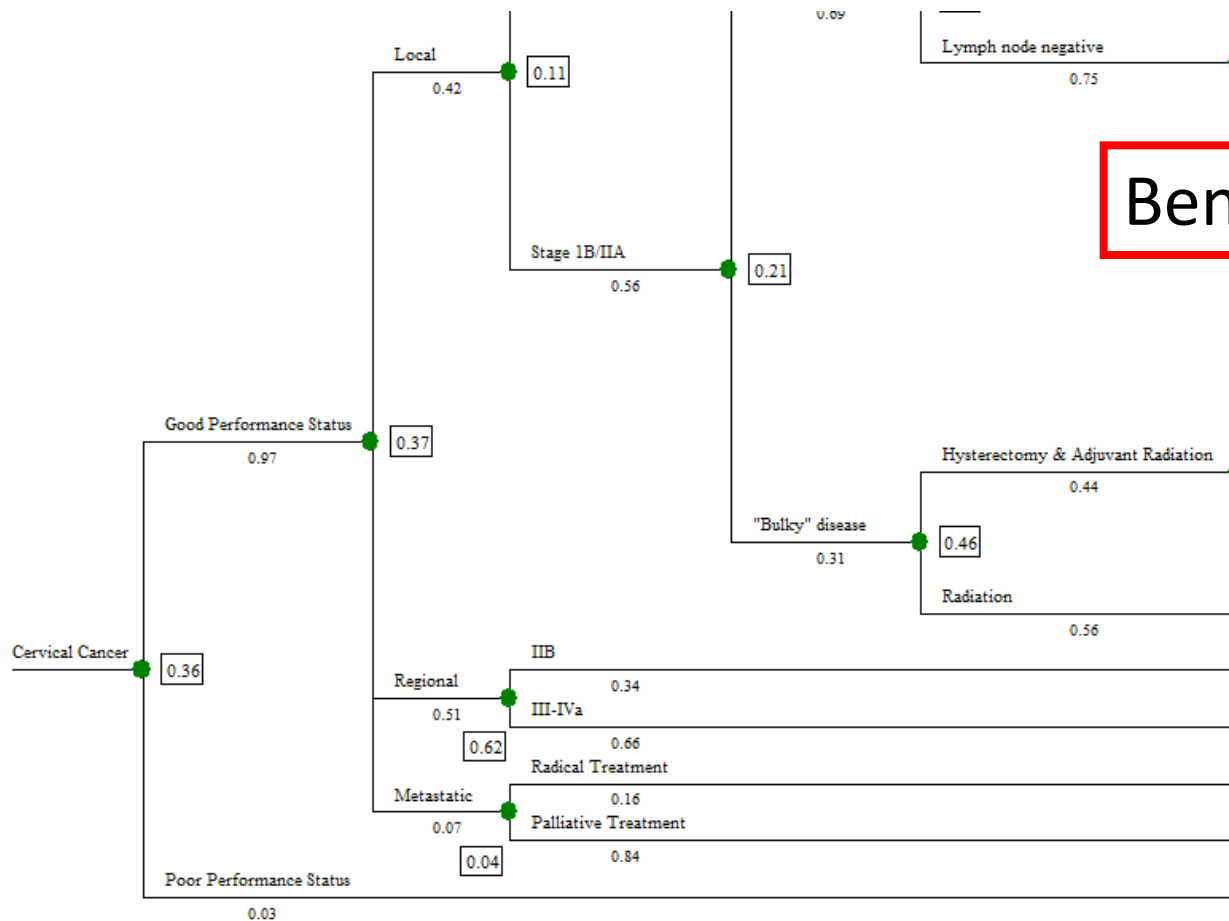
# C Rica/India/Phillipines/Thailand – survival benefit



**Benefit = 43%**



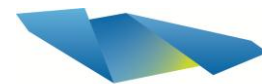
# India (Barshi) – survival benefit



# Challenges

- Scarcity and quality of data
  - L/R/M data vs TNM based CCORE data
  - ?staging investigations in LMIC
- Little/no data on low income countries

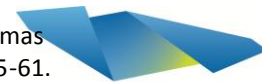
Income	Base	High	Low
High	CCORE	CCORE	CCORE
Medium (U)	IARC	CCORE	Lowest Lit
Medium (L)	IARC	CCORE	Lowest Lit
Low	IARC	CCORE	Local = 0



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# Discussion

