# CHRONIC KIDNEY DISEASE IN JAMAICAN CHILDREN

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# Chronic kidney disease in Jamaican Children

- 6 yearly review:
- Incidence and aetiology of chronic kidney disease (CKD) in Jamaica children
- Assess the size of the problem
- Enable forward planning
- Assess trends and determine interventions
- International comparisons

# Chronic kidney disease in Jamaican children 2007-2012 - M. Miller, J. Williams

- Patients newly diagnosed CKD across Jamaica
- All children < age 12 GFR <60ml/min/1.73m$^2$*
  (Schwartz formula)
  - At least 3 months
  - < 3 months evidence of chronicity at presentation with renal failure

- In infants
  - GFR as % of normal for age
  - Duration of < 3months if irreversible pathology at presentation

- Medical records:
  - Bustamante Children's Hospital (BCH)**
  - University Hospital of the West Indies (UHWI)
  - Paediatric nephrology notes (UHWI)

# Chronic kidney disease in Jamaican Children 2007-2012 (Miller and Williams)

- Demographic data- 2001 census
  - Cumulative annual incidence / million child population < age 12 years
  - Cumulative annual incidence / million population
  - Using population estimates for mid study year of 2009
  - Annualized incidence /million age related population

- Limitations –
  - likely underestimated -missing records

# Patients

- Age, sex, parish of origin
- Date of diagnosis of renal disease
- Date of diagnosis of CKD (GFR < 60ml/min/1.73m$^2$)
- Aetiology of renal disease
- Outcome: Dialysis, Death

# CKD in Jamaican Children

- 2007-2012
- 27 children (17 M 10 F) (1.7:1)
- Age
  - Mean age at diagnosis of renal disease 4.1 years (range birth – 9.2years)- antenatal in some
  - Mean age at diagnosis at CKD 4.3yr (range birth -10.2 years)

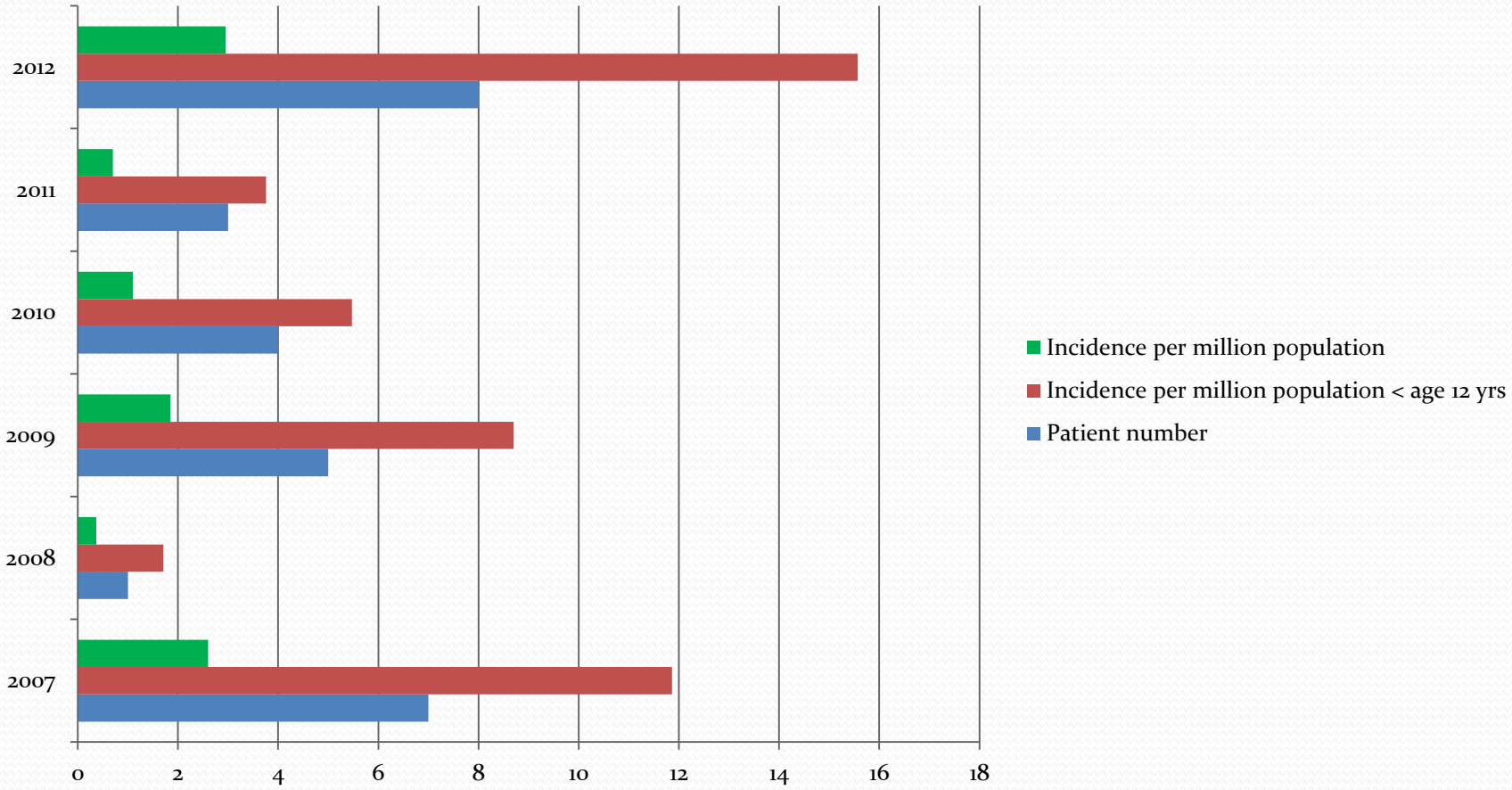
# Demographics*

27 children – 17 male : 10 female

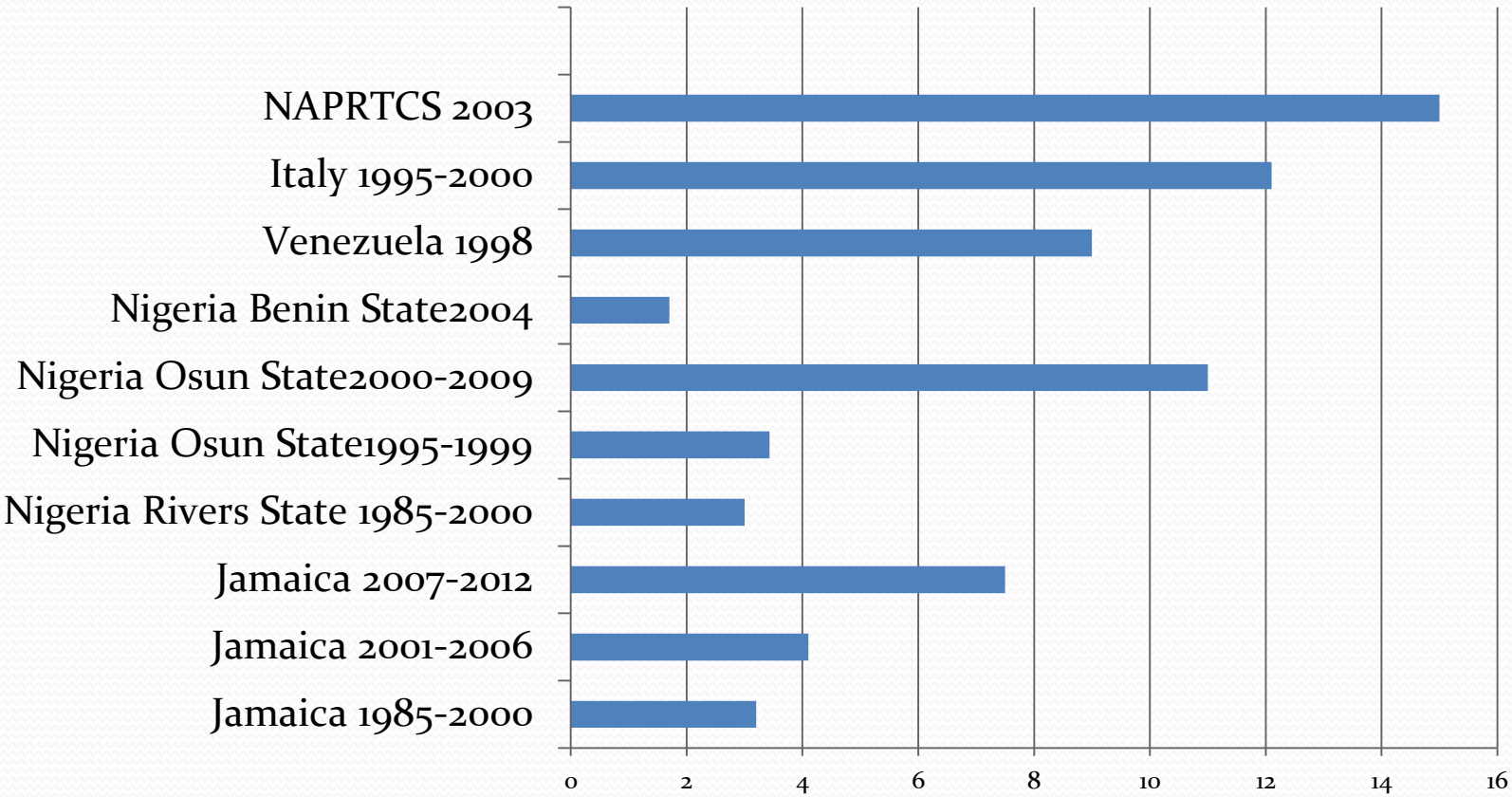

Parish information in 25 children*

# INCIDENCE

# Annualized incidence of CKD in Jamaican Children 2007-2012



# Worldwide incidence of childhood CKD per million age related population*




Variations in: definition of "childhood", definition of CKD,

# AETIOLOGY

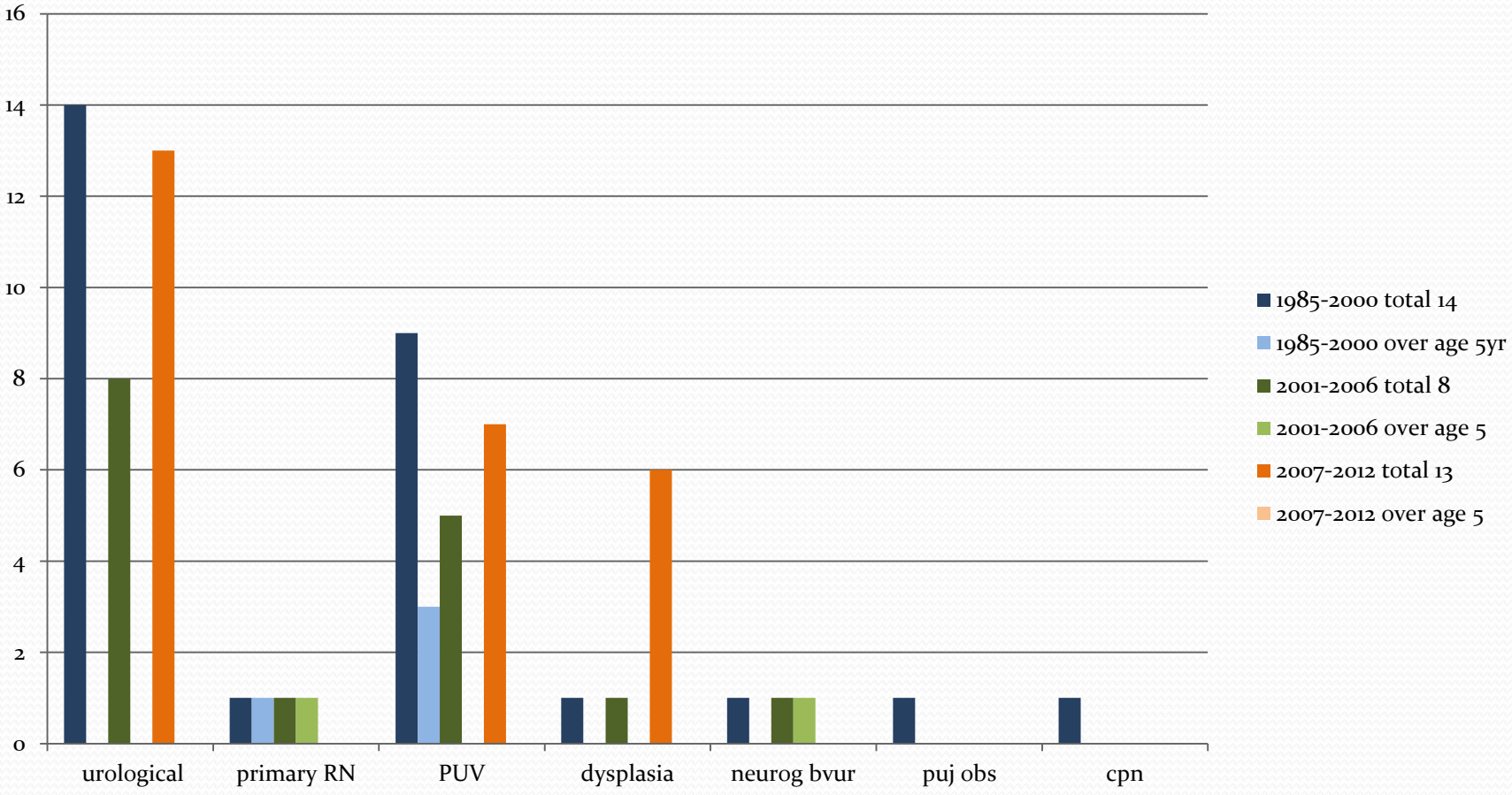
# Urological (48%)

| Aetiology | % | Age< 6 yrs | Age >6 years |
|---|---|---|---|
| Urological | 13 (48%) | 13 | 0 |
| PUV +/- VUR +/- dysplasia | 7 | 7 | 0 |
| Dysplasia isolated | 5 | 5 | 0 |
| Dysplasia VUR | 1 | 1 | 0 |

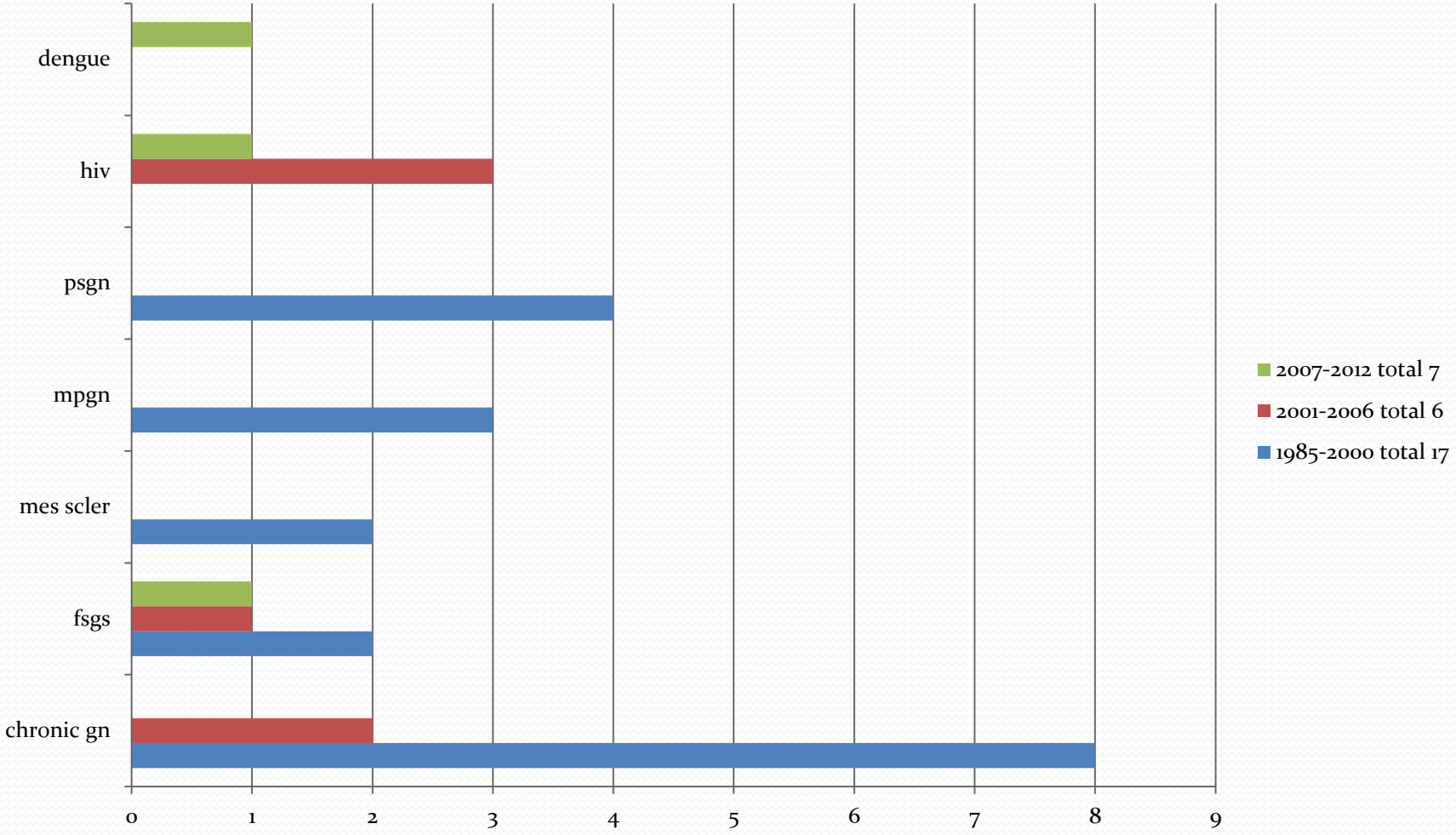
# Glomerular (25%)

| Aetiology | % | Age< 6 yrs | Age >6 years |
|---|---|---|---|
| **Glomerulonephritis** | 25 | | |
| Post infectious | | | |
| HIV | | 0 | 1 |
| Dengue* | | 1 | 0 |
| SLE | | 0 | 1 |
| FSGS | | 0 | 2 |
| Congenital NS | | 2 | 0 |
| **Hereditary** | 8 | | |
| Bardet Beidl s. | | 0 | 1 |
| ARPKD | | 1 | 0 |
| **Miscellaneous** | 19 | | |
| Ischaemic* | | 1 | 1 |
| Trauma | | 0 | 1 |
| Wilm's | | 1 | 0 |
| Unknown | | 0 | 1 |

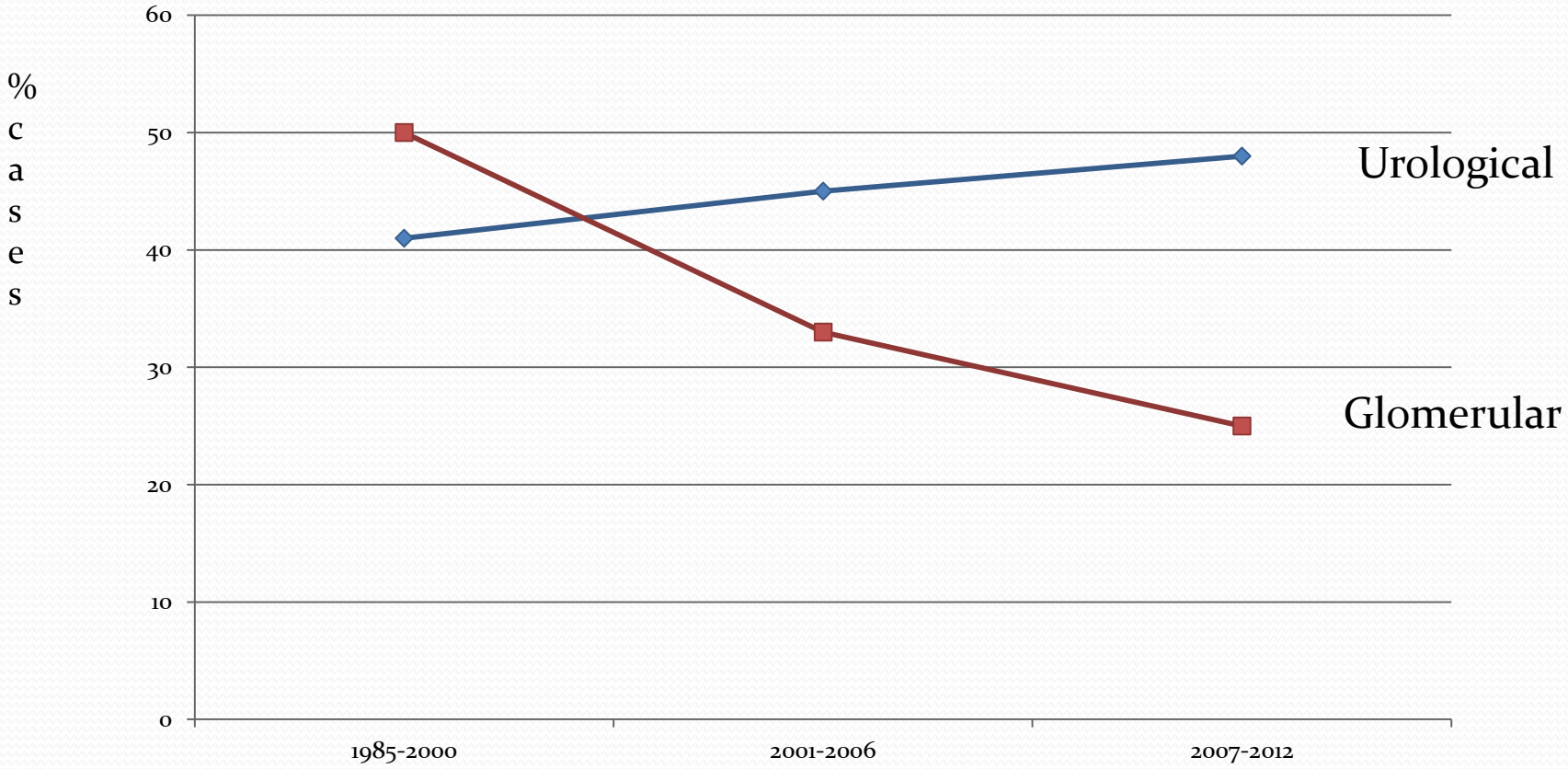
# Urological causes vs. age at CKD diagnosis 1985-2012



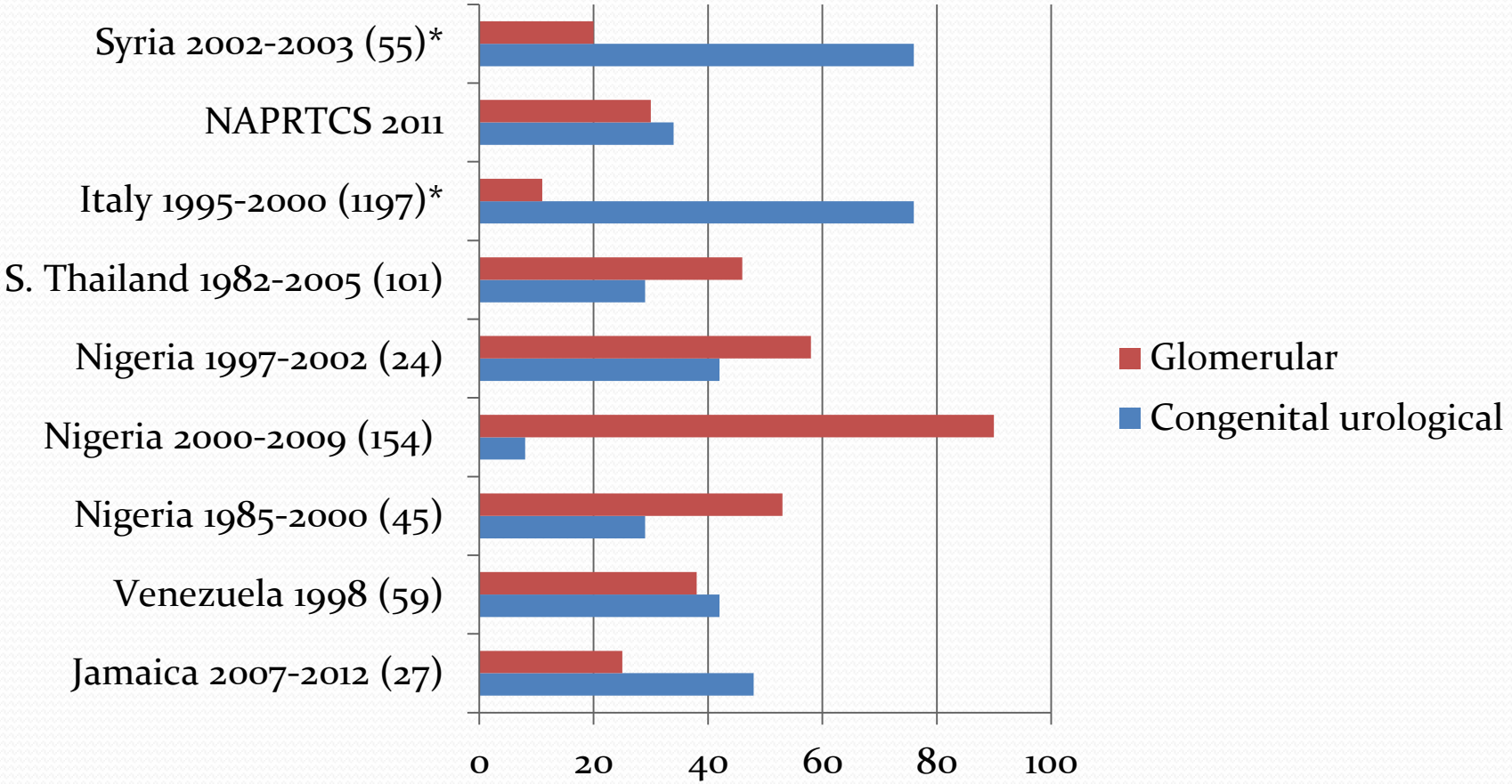
# Glomerular causes 1985-2012



# Glomerular vs. urological disease



# Aetiology vs. country



# OUTCOME

# Outcome

| | 1985-2000 | 2001-2006 | 2007-2012 |
|---|---|---|---|
| TOTAL | 34 | 18 | 27 |
| Local dialysis | 9% | 28% | 41% |
| Dialysis not offered | | | 2 cases<br>(CP, Metastatic Wilm's) |
| Death | 65% | 44% | 37% (10) |
| ESRD mortality | 65% | 28% (2) | 7% (2) |
| Transplanted | 0 | 1 (age 9) | 0 |
| Other causes of death | | Hypertension<br>Sepsis<br>HIV cardiomyopathy | SLE complications (1)<br>Interdialytic fluid overload (2)<br>Line sepsis (1)<br>Pneumonia (1)<br>Dengue related (infant) |

# SUMMARY

# What are we observing?

- More children with CKD each year
- Earlier diagnosis of CKD and urological disease.
- Fewer children with GN in ESRD at presentation
- More children with PUV / dysplasia
  - diagnosed earlier (UTI investigation policy, antenatal US)
  - Still early CKD
  - how many have been saved by early detection
- Antenatal screening – earlier diagnosis – not foolproof
- No other causes of obstruction – Antenatal US / UTI policy?
- No meningomyelocoele – neonatal referral

# What are we observing?

- No CKD from late treatment of glomerular disease MPGN
- Less HIV – better treatment protocols
- Dengue as a cause of CKD and death
  - Nephropathy / ATN

# What are we observing?

- Virtually all Jamaican children receive dialysis
  - Thailand – none
  - Parts of Nigeria – none

# Preventive measures

- Antenatal screening
- No change in investigation policy for UTI yet
- Study needed to guide practice
  - Objective data on number of cases of obstructive uropathy diagnosed on MCUG and US done for UTI
- Continue policies already implemented

# OUR CHALLENGES

# Challenges - background

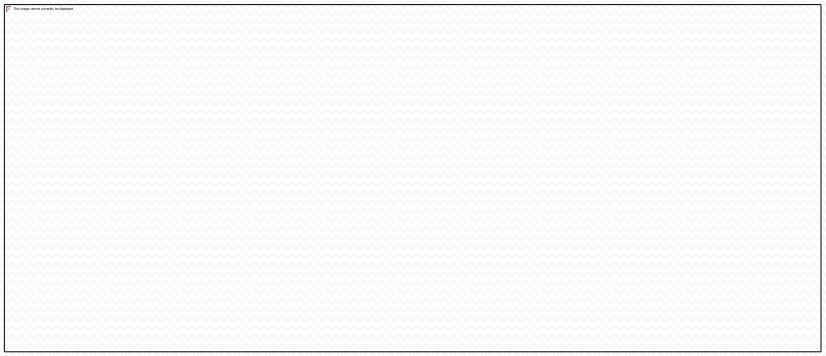
University Hospital of the West Indies

- Fee paying hospital
- Not Government run
- Chronic paediatric dialysis program


- No user fees
- Government run
- No chronic paediatric dialysis program

# Challenges

- Children kept alive by donations from charitable organizations e.g.
- Jamaica Kidney Kids Foundation



  - Issa Trust Foundation
  - Bridge of Life -DaVita Medical Missions

# Challenges

Transplantation:

- Possible at Government funded hospitals (Adults)
- Costs prohibitive at UHWI
- Possible transplantation program at BCH in 2014
- But the dialysis unit and paediatric CKD team are at UHWI
- Shortage of paediatric nephrologists

# Solutions

- Training of Paediatric Nephrologists

  **Jamaica Kidney Kids Foundation / Montreal Children's collaboration / Hospital for Sick Kids Toronto – collaboration**

  - For BCH
  - For Western Jamaica – Cornwall Regional
  - Central Jamaica – Mandeville
  - UHWI
- Funding now totally  donations and concessions
- Expensive
- Local training in the future

# Solutions

There must be dialogue between the Government

And the paediatric nephrologists

Caring for the children

To formulate a National Policy

# The children are our future

# They are our responsibility!

Thanks for your attention!