

St Lucia Diabetes and Hypertension Screening and Disease Management Programs

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Special Greetings

His Excellency Dr. Keith Mondesir

Minister of Health

Government of St. Lucia

Challenge: Diabetes & Hypertension Control

1. Both Diseases are largely preventable
2. Once manifest, both can be controlled
3. High incidence and poor control lead to complications
4. Complications are disabling or lead to premature death

Complications

1. Diabetes: Heart Attack, Stroke, Blindness, Renal Failure, Peripheral Vascular Disease (leg amputation)
2. Hypertension: Stroke, Heart Attack, Renal Failure
3. Both Lead to Severe Disability and Early Death

Diabetes & Hypertension in St Lucia

1. Anecdotal high rates
2. Several well publicized diagnosis & treatment campaigns (St Lucia Diabetic & Hypertensive Association)
3. Widely seen as public health problems

UHC Screening 2006

- Decision taken to do Nation-Wide screening
- Undertaken over ~6 months of 2006
- Performed throughout St Lucia
- Wide variety of settings

UHC Screening 2006

- Screened 30,910 St Lucians
- Probably largest population-based screening worldwide
- Nearly 20% of entire nation
- Ranks as one of world's great achievements
- Citizens with high glucose or BP referred for followup

Diabetes: Diagnosis and Definitions

1. Screening can not make diagnosis
2. Blood glucose tests taken as one-time event
3. Survey data forms ? Whether fasting tests or not
4. Final diagnosis can be achieved by laboratory tested glucose after either Oral Glucose Tolerance Test or Fasting Plasma Glucose
5. Elevated random screening values ~30-50% Diabetic within next year (~70% within two years)

Diabetes: Diagnosis and Definitions

1. Serum Glucose of 126+ mg/dl (7.0 mmol/L) abnormal
2. Serum Glucose of 140+ mg/dl (7.7 mmol/L) elevated
3. Serum Glucose of 200+ mg/dl (11 mmol/L) grossly elevated

These definitions were used for analysis of screening data
(grossly elevated ~ “Diabetes”)

Hypertension: Diagnosis and Definitions

1. Blood Pressure consists of Systolic (peak) and Diastolic (trough) elements
2. Hypertension can be result of elevation of either or both
3. Diagnosis of hypertension requires repeated measures of elevated blood pressure taken under controlled circumstances
4. Elevated screening values ~25-40% are diagnosed with hypertension within next year (~60% within two years)

Hypertension: Diagnosis and Definitions

Systolic Blood Pressure

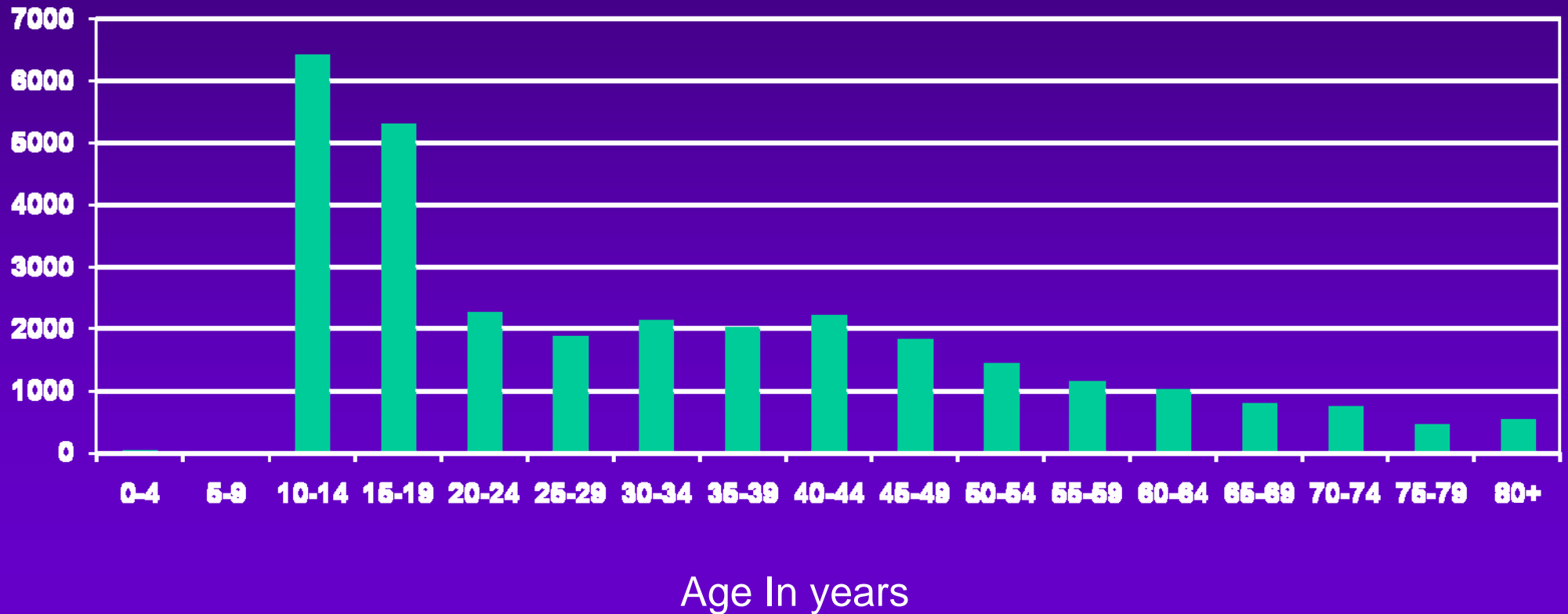
1. Stage 1: 140 – 159
2. Stage 2: 160 – 179
3. Stage 3: >180

Diastolic Blood Pressure

1. Stage 1: 90 – 99
2. Stage 2: 100 – 109
3. Stage 3: >110

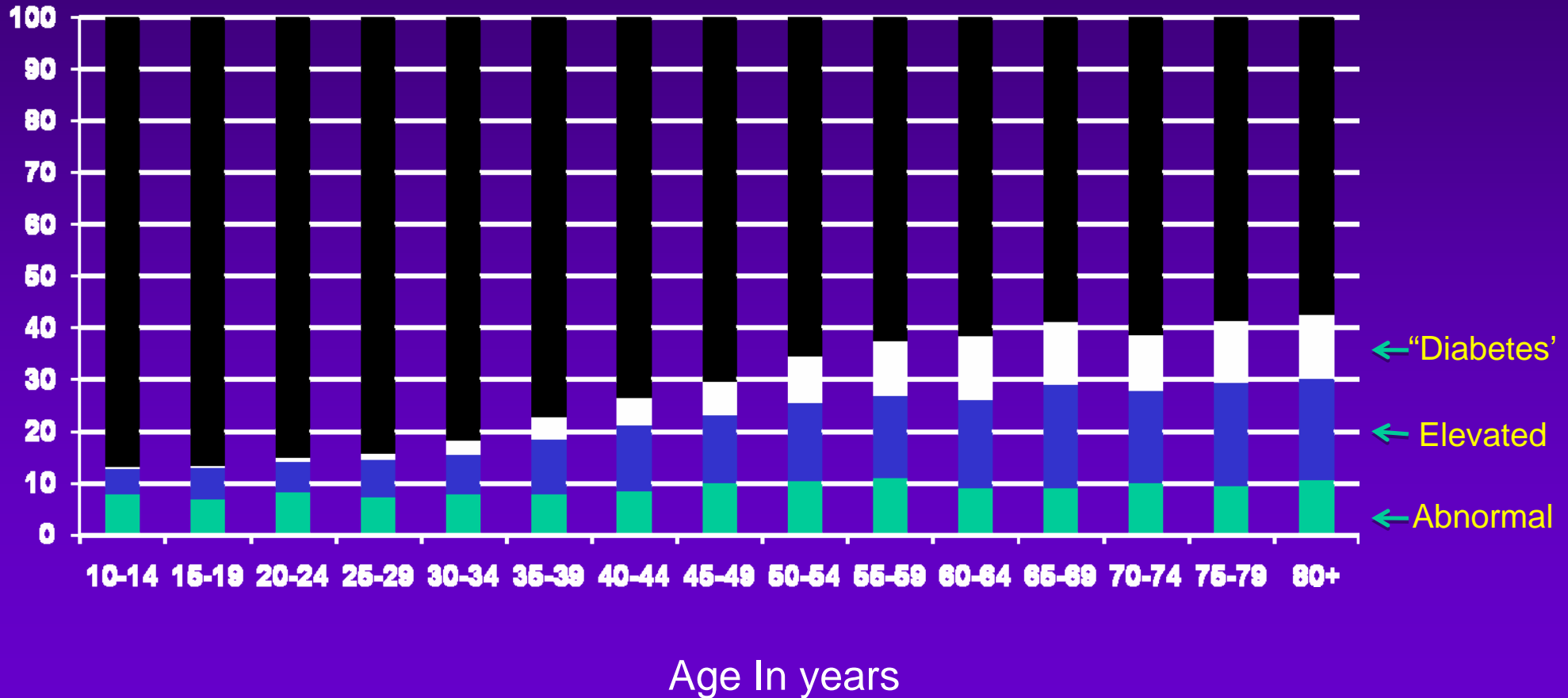
These definitions were used for analysis of screening data

Age Distribution of St Lucians Screened in 2006



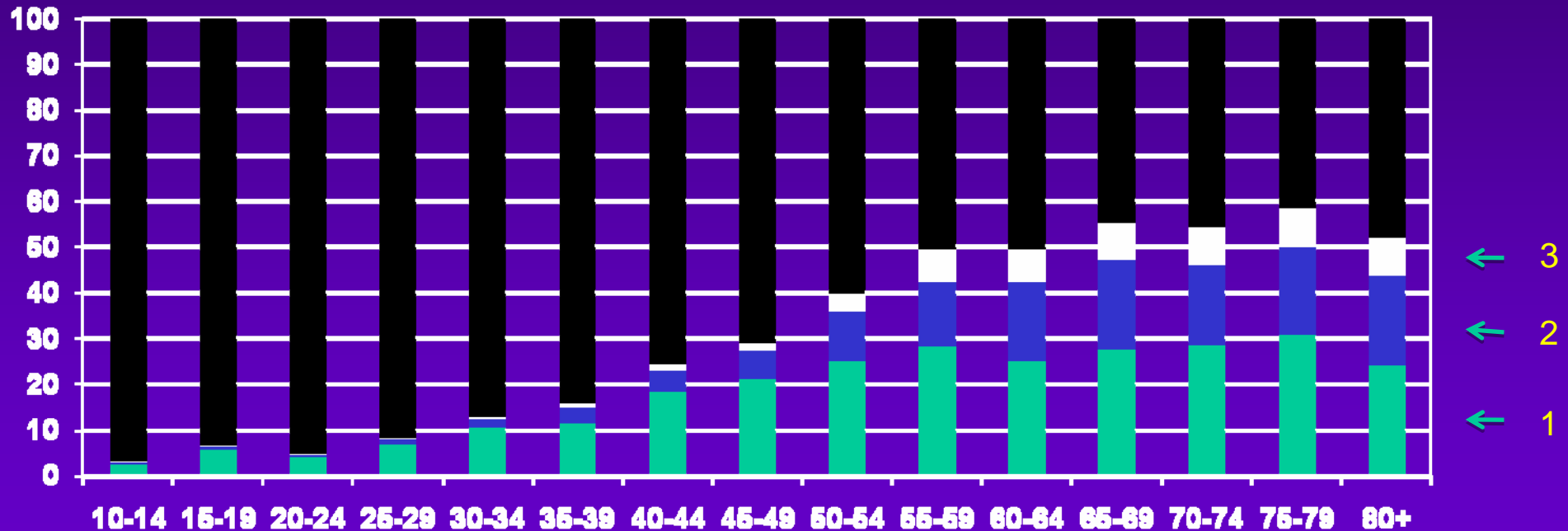
St Lucia Screening Program 2006

Percent With Abnormal Blood Glucose



St Lucia Screening Program 2006

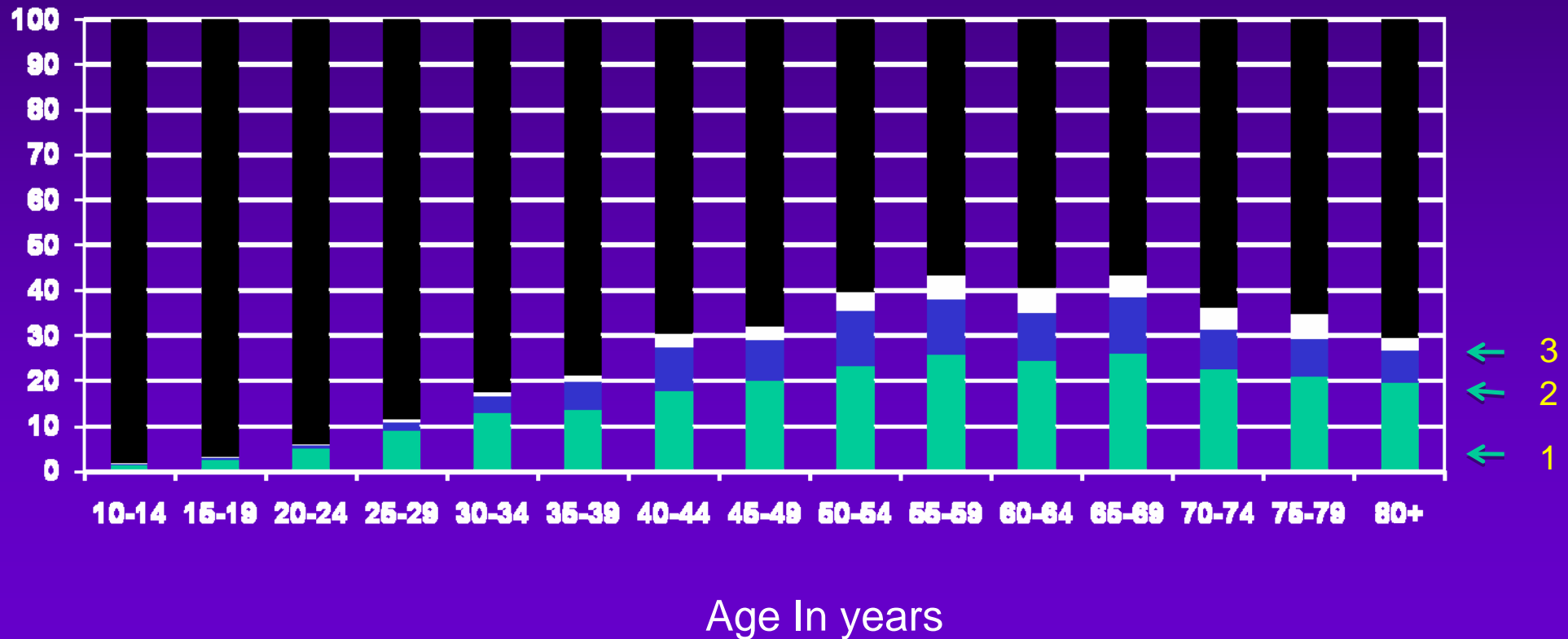
Percent With Abnormal Systolic Blood Pressure



Age In years

St Lucia Screening Program 2006

Percent With Abnormal Diastolic Blood Pressure



“Incidence” Adjusted to 2005 Estimated St Lucia Population For Age 18 and Over

1. Abnormal Glucose : 28.1%
2. Probably Diabetic : 8.1%
3. Abnormal Systolic BP: 29.8%
4. Abnormal Diastolic BP: 25.5%

Predictions: Increase in Disease Rates

Doubling of New Diabetics: ~4 years

Doubling of New Hypertensives: ~5 years

The St Lucia Screening Program

Highest Recorded Incidence in the World?

Is there other evidence to support this?

High Diabetes Incidence: Other Possible Evidence

- 1. Cause of Death: Confirmed as #1 by St Lucia
Ministry of Health**
- 2. Diseases not subject to coding error that are tightly
associated with diabetes: Nontraumatic lower limb
amputation**

Nontraumatic Lower Limb Amputation

- **Diabetics at High Risk for Developing Clogged Arteries**
- **Most commonly occur in Lower Limbs**
- **With Poor Diabetes Control, Lead to Gangrene**
- **Often Require Amputation of Affected Limb**

One of the Crippling Conditions from Poor Diabetes Control

Study Design

- **Review of Victoria Hospital Discharge and OR Records**
- **Cases of Amputation from Diabetic Peripheral Vascular disease Identified**
- **Period Covered: Discharge Date in Calendar 2006**

Findings

- **26 Admissions**
- **20 People (6 with two Admissions for Amputations)**
- **Mean Age 60.4**
- **53.8% Male**

Reference Data

- US National Center For Health Statistics
- 2005 National Hospital Discharge Survey
- Designed to Characterize All US Hospitalizations for Calendar Year (Year Patient Discharged)
- Records Selected Included Diagnosis for Diabetes Peripheral Vascular Disease and Procedure Lower Limb Amputation

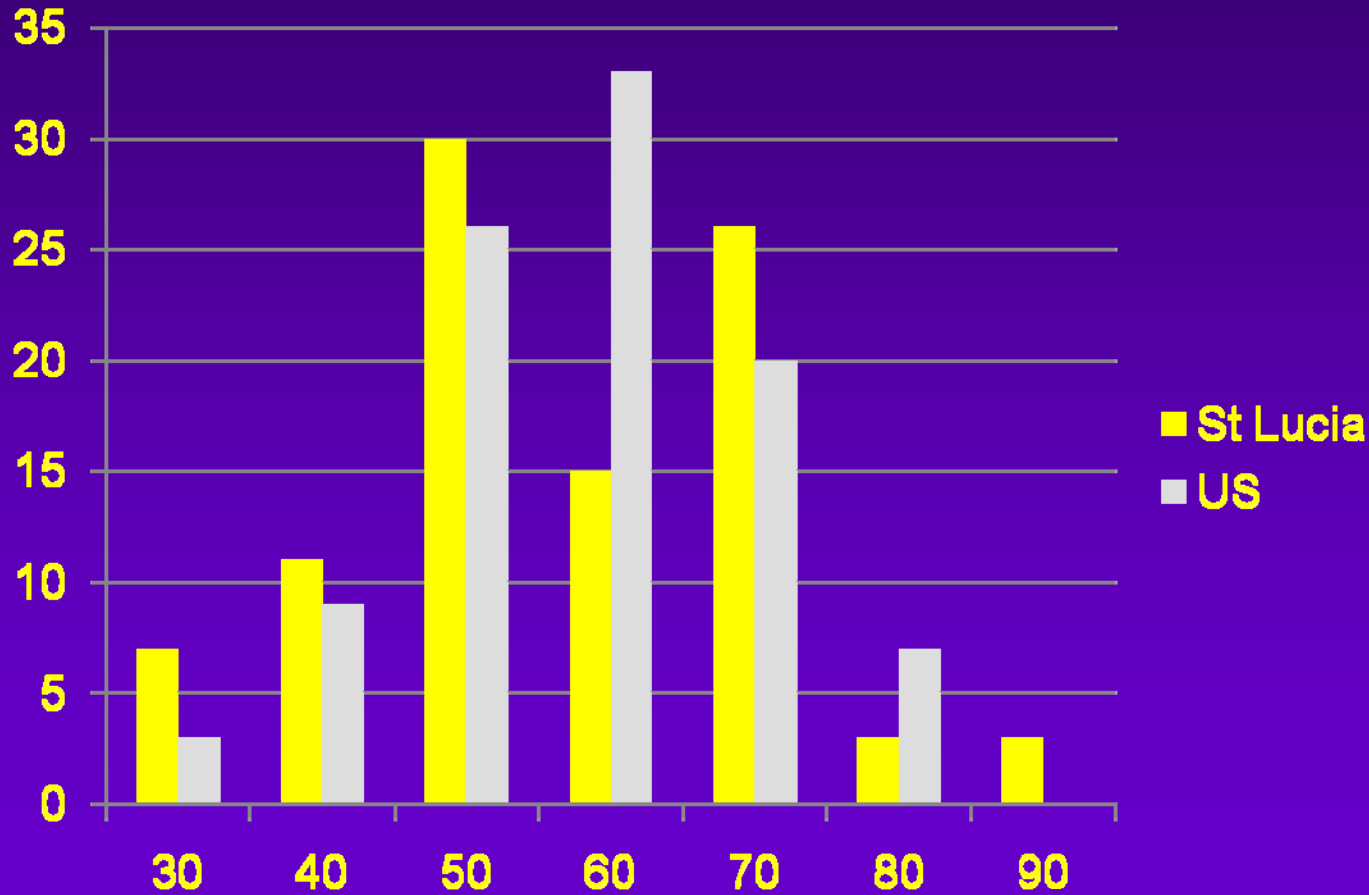
Comparisons

St Lucia Rates: 15.7 Discharges / 100,000

US Rates: 5.0 Discharges / 100,000

Relative Risk: 3.1***

Age Distribution (% by Decade)



Age Distribution

- St Lucian Diabetics Admitted to Hospital for Amputation Younger than US Diabetics (60.4 vs. 63.5 Years old)
- St Lucian Age Distribution Bimodal

Conclusions

1. St Lucian Diabetics Admitted to Hospital for Lower Limb Amputations 3.1 Fold More Often Than in US
2. St Lucian Diabetics Younger than US when Admitted
3. Supports Conclusion that St Lucia Diabetes rates very high

Diabetes Disease Management Program

- Multi-Ministry Working Group Established
- Task Force Selected and Strategic Plan Developed
- Developed First Generation of “St Lucia Model”

St Lucia Diabetes Management Model

- “Emphatic” Social Marketing: when you really, really need to change.
- Uses “Targeted One Plus Two” where defined populations receive an intervention that has two levels of substantive reinforcement

St Lucia Model: Example 1

Target: High School Students

One: Track and Intervene with Abnormal BMI

Plus one: Provide free “good” food at schools (no other food allowed on campus)

Plus two: Individualized on campus exercise programs for all students

St Lucia Model: Example 2

- Target: Panel of Diabetic Patients under care of MD
- One: Track and Intervene with A1C Levels
- Plus one: Fresh food voucher for patients that achieve goals of timeliness of testing and target range results
- Plus two: Bonus for Physicians with panel of target range screening timeliness and results

Diabetes Disease Management Program: the Foundation

- Country-wide Health Information System Available:
 - Labs and Pharmaceuticals all linked to Pt Record
 - Disease Management Support Built into system
- Patients provided with free labs and medications (insulin the most expensive line-item in National Pharm. Budget)

CARICOM Diabetes Summit

- St Lucia Hosting Second CARICOM Health Summit
- Subject is Diabetes Screening and Disease Management
- Tentatively Planned for March 29, 2008

How Did I Get Involved

Designed and Helped Deploy Country-Wide Health Information System in St Lucia

Asked to do evaluation of actuarial estimates for a targeted capitated payment system for some classes of patients

Hospital Chart Review led to observation that number one reason for admission was Diabetes

Then...

I asked for any incidence data they might have

Was shown ~50kg of paper from the screening
program

Keypunched sample of ~1,000 records: highest
incidence I had ever seen or could find
published

What I Did Last Year...

I strongly suggested that all 50kg be keypunched
Only solution was for me to take the 50kg home
and figure out some way to get it done in Halifax
After energetic search for keypunch solutions,
spent every available free moment keypunching
~31,000 records (~600 hours)

Observations

1. Don't volunteer for the keypunch unless there is no other choice
2. It is surprising how valuable selected keypunch projects can sometimes be
3. ~31,000 records input will make your hand sore

Many Thanks....I Hope This Has Been Helpful

