Life style diseases and their relationship to the tourism thrust

The theme of my talk is: “Early detection is the best protection”
Ariadne the daughter of the king of Crete had a string ———
THIS STRING WILL CARRY US THROUGH AN EXCURSION INTO THE LIFESTYLE DISEASES OF OUR CARIBBEAN POPULATION

ARIADNE’S STRING will lead us through

Hypertension
Diabetes
Obesity
Alcohol consumption
Mental illness
Cancer
Osteoporosis
and
Other clinical challenges
Our excursions will touch on:
Some selected clinical situations
this kind of investigation is very much like Theseus who tried to find his way through the Cretan labyrinth using only Ariadne’s string ...
POPULATION KILLERS IN TOBAGO AND PROBABLY IN THE WHOLE CARIBBEAN

- DIABETES, GLUCOSE INTOLERANCE, MAINLY IN FEMALES
- HYPERTENSION IN BOTH SEXES
- ALCOHOLIC CONSUMPTION AND ALCOHOLISM IN MALES
- CANCER IN BOTH SEXES
- (OBESITY IN BOTH SEXES)
ATTRIBUTABLE RISK FRACTION (PROPORTION OF CARDIOVASCULAR MORTALITY ATTRIBUTABLE TO EACH RISK FACTOR) IN THOSE AGED <60 YEARS AT BASELINE, BY SEX

- Hypertension (140/90)
- Hypertension (160/95)
- Glu int/diabetes
- High alcohol intake

Fraction

- Men
- Women
ALCOHOL AND DEATH FROM MEDICAL CAUSES

Alcoholism rate, Tobago males by age-group

Drinking type, Tobago males by age-group

Hazard rate ratio for males cardiovascular mortality

CAGE POSITIVITY

T&I consuming too much alcohol
HYPERTENSION

Risk factors associated with essential hypertension:
- Excess sodium intake
- Excess alcohol intake
- Obesity and weight gain
- Physical inactivity
- Dyslipidemia, independent of obesity
POOR BLOOD PRESSURE CONTROL IS COMMON IN EUROPE

- Controlled at <140/90 mmHg
- Controlled at <160/95 mmHg

Scotland, Germany, Finland, Spain, Russia, Poland, Italy, Hungary, France, England, Czech Republic, Belgium

Consequences of Hypertension: Organ Damage

CHF = congestive heart failure; CHD = coronary heart disease; LVH = left ventricular hypertrophy.

SERUM LIPIDS
SERUM CHOLESTEROLS AND OTHERS
Serum lipids- very important in hypertension and diabetes
HDL removes plaque, LDL markedly increases plaque and triglycerides less markedly increases plaque

Blood flow becomes restricted by the plaque.
The inside of the plaque is full of fats and cholesterol.
The cap separating the plaque from the inside of the artery becomes thin, weak, and prone to rupture.

HDL removes cholesterol from macrophages
Chemically modified LDL delivers cholesterol
Diabetes
What is Diabetes?

• DIABETES, THE WORLD’S BIGGEST KILLER IS
• A DISEASE IN WHICH THE BODY DOES NOT
• PRODUCE OR PROPERLY USE INSULIN.

• Insulin is a hormone that is needed to
• convert sugar, starches and other food into
• energy needed for daily life.

• Causes... unknown:

**PROBABLE FACTORS:**
GENETICS

**LIFESTYLE (ENVIRONMENTAL) FACTORS:**
OBESITY AND LACK OF EXERCISE
Diagnosis of diabetes and pre-diabetes-the blood sugar

To assess overall control the best test is the Hb A1C- a blood test
30 year all cause mortality, Plymouth Tobago (adults 20-60 years, normoglycaemic vs impaired glucose tolerance (IGT)/Diabetes)

Males: p=0.9

Females: p < .001

IGT/Diabetes would appear to be associated with the relatively increased mortality rates in women.

Diabetes Prevalence

TOBAGO DATA
• Suggests that the disease is alarmingly common
• Diabetes in men >60 is 3 times as common as in the USA
  Comparable data for Trinidad is not yet available
• Diabetes- present in about 25% of the adults and 7.8% of the total population of the USA

• Internationally, ¼ of all diabetics are unaware of their disease
Diabetes

- Tight blood sugar control is needed – this also will help to lower the amount of urine micro-albumin (protein).
- The Hb A1C is a good means of monitoring the status of diabetic control.
AGE STANDARDISED DEATH RATE FOR DIABETES, BOTH SEXES, THE WORLD


The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.
Type 1- younger patients—these lack insulin
Rx insulin

Type 2- associated with obesity in older age groups—these patients are “resistant” to insulin
Rx tablets

Immediately after pregnancy, 5% to 10% of women with gestational diabetes are found to have permanent diabetes, usually, type 2.
Diabetes: the eye, the kidney, the brain and the heart and its vessels

DIABETES AND THE ELDERLY
½ are elderly >65 years. Elderly already have renal impairment so this is double trouble
Adjusted Rate of Diabetes Prevalence Type 2 in Adults in Selected Countries
if good care of the diabetic is not achieved in type 1
Growth to adulthood is impaired
if good care of the diabetic is not achieved in type 1
AND type 1
development of diseases in many organs may result
Foot check for persons with diabetes

Every day, check all over foot including between the toes. Use of a mirror may be necessary to view the bottom of the feet. Let your doctor or nurse know if you have:

- Redness
- Cuts, cracks, blisters, or swelling

A well-trained pedicurist will recognize problems.
Mean coronary heart disease mortality rates by degree of glucose tolerance

<table>
<thead>
<tr>
<th></th>
<th>Coronary heart disease mortality (incidence rate per 1000 persons per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal glucose levels</td>
<td>1</td>
</tr>
<tr>
<td>Impaired glucose tolerance (IGT)</td>
<td>2</td>
</tr>
<tr>
<td>Newly-diagnosed diabetes</td>
<td>3</td>
</tr>
<tr>
<td>Known diabetes</td>
<td>4</td>
</tr>
</tbody>
</table>

Adapted from: Eschwège E, et al (1985)

Source: Diabetes and Cardiovascular Disease: Time to Act
© International Diabetes Federation, 2001
DIABETES INTERVENTION

Dietary/physical intervention/obesity and hypertension management/smoking cessation/alcohol restriction/drugs

ref: jaber and madias, am j med 2005, 118,1323-1330
Lifestyle and Diabetes

CMO:

• 80% of all type 2 diabetes can be avoided by healthy diets and exercise
OBESITY
OBESITY IS QUICKLY OVERTAKING TOBACCO AS THE LEADING PREVENTABLE CAUSE OF CANCER

RISK OF DEVELOPING / HAVING RECURRENCE AND OF DYING FROM CANCER MAY BE INCREASED IN THE OBESE
OBESITY AND OVERWEIGHT IN TOBAGONIANS

bmi kg/m²
<25.5
>25.5-<29.9
>30

ref: wheeler, shew, miljkovic, patrick, hill, cauley, bunker, zmuda CHRC2006
Distribution of body mass (BMI) by gender among Tobagonians

Distribution of body mass (BMI) by gender among Barbadians

ref: wheeler, shew, miljkovic, patrick, hill, cauley, bunker, zmuda CHRC2006
ref: foster, rotimi, frazer, sundarum, liao, gibson, holder, hoyos, mellanson-king Ethn.
Mean BMI by age group, Tobago
• Atherosclerosis of the Heart and Great Vessels
Detection of asymptomatic atherosclerosis BEFORE the appearance of clinically apparent vascular disease is important for initiation of vigorous treatment to prevent clinical CVD.

LIPID PROFILE  STRESS TESTING  DIABETIC SCREEN
• Is the Caribbean woman at special risk?
30 year all cause mortality, Plymouth Tobago (adults 20-60 years, normoglycaemic vs impaired glucose tolerance (IGT)/Diabetes)

Males: p=0.9

Females: p <.001

IGT/Diabetes would appear to be associated with the relatively increased mortality rates in women. Are there other factors?

Myocardial infarction prevalence in middle-aged adults: The atherosclerosis risk in Communities (ARIC) Study

Myocardial infarction rates were higher in white than in black men but higher in black women than in white women.

Burke GL et al. Stroke 1993, 26, 386-391
Lipo-protein profile in men-Tobagonians, African-Americans and Caucasians (cont’d)

c caucasians a-a african americans  t tobagonian

ref: miljkovic-gacic, bunker, ferrell, kammerer, evans, patrick, kuller. metabolism, 2006; 55(1):96-102
AT LEAST 80 DIABETIC/HYPERTENSIVE PATIENTS PRESENT IN TRINIDAD AND TOBAGO IN NEED OF DIALYSIS/TRANSPLANTATION ANNUALLY
DOUBLE JEOPARDY

the main risk factors for cardiovascular disease are the main risk factors for renal disease (diabetes and hypertension) AND the rate of cardiovascular events) increases with the severity of kidney disease of any type

Age standardised rates of CV events per 100 person-years


Mc Collough PA, Rev Cardiovasc Med 2002;3(2):71-76
**WHAT DOES TRINIDAD AND TOBAGO OFFER?**
Free drugs for several ailments including hypertension, diabetes and hyperlipidemia.

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**Pharmacy's Copy**

**MINISTRY OF HEALTH**
Chronic Disease Assistance Plan (C-DAP)

<table>
<thead>
<tr>
<th>RX Date</th>
<th>dd/mm/yyyy</th>
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<tbody>
<tr>
<td>ID #</td>
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<table>
<thead>
<tr>
<th>Item</th>
<th>Directions for use</th>
<th>Qty. Disp.</th>
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<tbody>
<tr>
<td>51 Insulin 70 / 30 [Novo]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52 Insulin 70 / 30 [Lilly]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53 Insulin N.P.H. [Novo]</td>
<td></td>
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</tr>
<tr>
<td>54 Insulin N.P.H. [Lilly]</td>
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<tr>
<td>55 Insulin Regular [Novo]</td>
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<tr>
<td>56 Insulin Regular [Lilly]</td>
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<tr>
<td>21 Syringes</td>
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<td>2 Gliclazide 80mg Tablets</td>
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<tr>
<td>3 Glibenclamide 5mg Tablets</td>
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<td>4 Metformin 500mg Tablets</td>
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<tr>
<td>5 Acetazolamide 250mg Tablets</td>
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<tr>
<td>6 Betaxolol 0.25% Eye Drops</td>
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<tr>
<td>7 Pilocarpine 2% Eye Drops</td>
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<td></td>
</tr>
<tr>
<td>8 Pilocarpine 4% Eye Drops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Timolol 0.5% Eye Drops</td>
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<td></td>
</tr>
<tr>
<td>10 Atenolol 50mg Tablets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Bendrofluazide 5mg Tablets</td>
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<td></td>
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<tr>
<td>12 Enalapril 10mg Tablets</td>
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<tr>
<td>40 Frusenime 40mg Tablets</td>
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<td>13 Lisinopril 10mg Tablets</td>
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<td>14 Metyldopa 250mg Tablets</td>
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<td>16 Nifedipine SR 20mg Tablets</td>
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<td>18 Digoxin 0.125mg Tablets</td>
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<tr>
<td>19 Glyceryl Trinitrate 0.5mg Tablets</td>
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<tr>
<td>20 Isosorbide Dinitrate 10mg Tablets</td>
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<tr>
<td>22 A.S.A. 81mg Tablets</td>
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</tr>
<tr>
<td>41 Simvastatin 20mg Tablets</td>
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</tbody>
</table>

| CDAP Rx No: | 1972396 |

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For Physician's Use Only

Physician's Name (Block Letters)

Physician's Signature

Physician's Address

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Dispensing Pharmacist Use Only

Pharmacy Name

License #

Pharmacist Name
Racial trends of some causal and associated factors (Trinidad and Tobago)

Indo-Trinidadians have higher LDL and triglycerides than Afro-Trinidadians

Afro-Tobagonians have lower LDL and triglycerides than Afro-Americans and white Americans

Indo-Trinidadians have higher LDL and triglycerides than Indians of Madras or of North India

Miller et al, Int J Epid, 1984, 13, 413-421

Miljković-Gačić et al, CHRC 2004
# RELATIONSHIP OF OSTEOPOROSIS TO FRACTURE STATUS

- **USA**

<table>
<thead>
<tr>
<th>Bone mineral content</th>
<th>Prevalence of T score &lt; -2.5</th>
<th></th>
</tr>
</thead>
</table>

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CARCINOMA BREAST

Approximately 1 in 8 women will develop breast cancer during their lives (1 in 1000 men) however, internationally, death rates from breast cancer have been declining since 1990 thanks to women becoming more aware about the benefits of breast examinations. In Trinidad and Tobago (and probably the whole Caribbean) the number of women under 35 being diagnosed with cancer has doubled this year (ref National Cancer Radiotherapy Centre, Trinidad Express Oct 2014)

Detecting breast cancer in the early stages ensures the maximum chance of survival and the least obtrusive treatment
Cancer rate rises for younger women
CA
CERVIX
Female reproductive anatomy

- Fallopian tube
- Uterus
- Ovary
- Eggs developing inside ovary
- Myometrium
- Endometrial (uterine) lining
- Cervix
- Vagina

These are the internal organs that make up a woman's reproductive system.
PAP SMEAR

Pap smear: cells are scraped from the cervix and examined under a microscope to check for disease or other problems.

Cervix viewed through speculum with patient in lithotomy position.
Human papilloma virus infection

- High-risk HPV infection is a cause of nearly all cases of cervical cancer
- VACCINE IS NOW AVAILABLE
PROSTATE CANCER
THE NERVE CENTRES OF THE PILOT PROSTATE CANCER STUDIES

POST OFFICE, PLYMOUTH, TOBAGO, WEST INDIES

GRADUATE SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF PITTSBURGH, USA
SEER US PROSTATE CANCER DATA, 2005-2009, AGE-ADJUSTED RATES PER 100,000, BY RACE/ETHNICITY
SEER US PROSTATE CANCER MORTALITY, 2005-2009, AGE-ADJUSTED RATES PER 100,000, BY RACE/ETHNICITY

- ALL RACES
- WHITE
- WHITE HISPANICS
- WHITE NON HISPANICS
- BLACK
- ASIAN/PACIFIC ISLANDER

RATE
Age standardised mortality rates, selected countries, all ethnicities, prostate cancer, 2004, WHO

GLOBAL BURDEN OF DISEASE: DATA SOURCES, METHODS AND RESULTS.
Anecdotal evidence that lycopene supplementation might be a useful adjunct to treatment for prostate cancer

(DAILY MAIL UK and many other papers)

Supermarket tomatoes that ward off cancer
Lycopene supplementation and prostate cancer
Change in serum PSA in lycopene interventional trial

Tomato species classification: solanum lycopersicum
81 men studied
PSA levels fell 15% (p=.005) during the first month but returned to randomisation levels at month 4. PSA levels was similar in the two groups.

• ref: Bunker, Mc Donald, de la Rosa, Boumosleh, Patrick, CHRC 2006
Logistic Regression, HHV8 Antibody and Androgen Receptor in Tobago Prostate Cancer Cases and Controls

<table>
<thead>
<tr>
<th>AR</th>
<th>HHV8 N</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>- 103</td>
<td>0.84 (0.49-1.43)</td>
</tr>
<tr>
<td>S</td>
<td>- 111</td>
<td>1.11 (0.55-2.23)</td>
</tr>
<tr>
<td>L</td>
<td>+ 46</td>
<td>2.46 (1.13-5.35)</td>
</tr>
<tr>
<td>S</td>
<td>+ 41</td>
<td>1.0 REF</td>
</tr>
</tbody>
</table>

ref: hoffman, bunker, pellett, trump, patrick, dollard, keenan, jenkins, J infect dis 2004, 189, 15-20
TOP FIVE CAUSES OF MALE MORTALITY IN TOBAGO BY CANCER TYPE

PROSTATE, 170
LEUKEMIA, 15
BRONCHUS & LUNG, 30
COLON & RECTUM, 34
LIVER, 12
OTHER & UNKNOWN, 72

Roache et al, ??Reports of the Trinidad and Tobago cancer registry?? year?
Argument for prostate cancer screening in populations of African-Caribbean origin

BRITISH JOURNAL OF UROLOGY INTERNATIONAL
AUGUST 2014
State of the art OCT – spectral domain for glaucoma and diabetes
good care of the young diabetic is needed for satisfactory Growth to adulthood
To achieve satisfactory growth to adulthood

Your doctor will intervene on

- blood sugar
- general medical status including obesity and nutritional disorders
- blood pressure
- anemia
- hyperlipidemia
- infections
if good care of the diabetic is not achieved

Growth to adulthood is impaired by development of diseases in many organs
ORAL HEALTH
MENTAL HEALTH

The link of medical illness to mental health:
20% persons who have suffered a myocardial infarction have major depression and major depression is associated with a 1.8 times frequency of a first heart attack.
Stress

Emotions
- Alienation
- Irritability
- Apathy
- Low Confidence

Behaviour
- Accident Prone
- Loss of Appetite
- Restless
- Smoking and Alcohol

Mind
- Anxiety
- Hasty Decisions
- Negativity
- Impaired Judgment

Body
- Headaches
- Skin Problems
- Breathless

Diagram of stress consequences
HEALTH JUMBIES MOKE JUMBIES HEALTH WALK TO HIGHLIGHT MENTAL AWARNESS WEEK SAN FERNANDO Trinidad Express 6oct 2014
ANCIENT TRADITION: A DRAGON DANCE IN MADRID, SPAIN. "TAI CHI" IS AN CHINESE ANCIENT MARTIAL ART.
A PHYSICAL-SPITIRITUAL PRACTICE A MOVING MEDITATION TECHNIQUE WITH THE AIM TO BENEFIT MENTAL HEALTH.
Trinidad Express 6oct 2014
YOGA

A USEFUL ADJUNCT IN TREATMENT OF STRESS RELATED CONDITIONS
• DISEASES OF THE EYE
Trauma, glaucoma, infections. cataract
THE CALDER HALL COMPLEX

WHAT DO WE OFFER?
A spacious waiting room
SPA MEDICAL THERAPY
SURGICAL OPERATIONS
BONE DENSITY TESTING to help prevent fractures
NEUROLOGICAL TESTING including ADULT AND PAEDIATRIC ELECTROENCEPHALOGRAPHY
HEARING TESTING, INCLUDING INDUSTRIAL TESTING
BONE DENSITY TESTING TESTING TO HELP PREVENT FRACTURES
State of the art OCT – spectral domain for glaucoma and diabetes
IMAGING
ULTRASOUND, ECHOCARDIOGRAMS, X-RAYS, CT EXAMS
24 HR BLOOD PRESSURE MONITORING AND HOLTER TESTING

acceptable  normal  critical

Electrocardiogram
Holter monitor
Heart
LABORATORY MEDICINE
THE FUTURE

I hope that the thread of Ariadne will guide us, as it guided Theseus, out of the labyrinth that I have traversed.
Consultants available for consultation today

• Ms Yvonne Braithwaite: Spa Medicine
• Senator, Dr Victor Wheeler: Obstetrics and Gynaecology
• Dr Dorian Dwarika: Ophthalmology
• Dr Katinka Kundler: Osteopathic Medicine
• Dr Chidi Okereke: Internal Medicine
• Dr Helene Marceau-Crooks: Stress Syndromes
• Mr George Bell: Health Administration
• Dr Alan Patrick: Internal Medicine
SPECIAL FEATURES AVAILABLE TODAY

• Aerobics: Solomon Joseph

• Displays by ENVIROSPEC-WATER: Judith Ramlal, Winston Douglas, George Bell

• LIVE SMART 360°: Dwayne Mark Anthony Austin, George Bell
Acknowledgements

Thanks to: Tobago Regional Health Authority, CARPHA and the University of Pittsburgh,
Without the support of these benefactors, our studies would not have been possible.
Trinidad and Tobago  
Life expectancy at birth: total population: 72.29 years  male: 69.42 years  female: 75.24 years (2014 est.)
• **Life expectancy** Trinidad and Tobago
  
  • **Total population:** 72.29 years  male: 69.42 years  female: 75.24 years (2014 est.)
IMAGING