The True NTH Exercise and Diet Project

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Prostate cancer treatment and treatment effects

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Nutritional Metabolism

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Exercise Physiology
Can exercise keep prostate cancer at bay?
Background: why we are doing this project?

• 250,000 men living with prostate cancer
  – 40,000 diagnosed per year

• 84% predicted to live 10 years or more
  – More health problems than age matched population
  – More than 30% will die of cardiovascular disease

• Cancer now a chronic illness
Rationale

• USA study following 2705 men over 10 yrs (Kenfield et al 2011)
  • Number of deaths 36% lower in men who walked on average one hour per day
  • Recurrence 49% lower in men taking 3 or more hours of vigorous activity per week and 61% fewer dying from cardiac events

• Risk of developing CVD in men taking Androgen Deprivation Therapy (ADT)
  • Meta-analysis of RCTs (Nguyen et al 2011)
  • Meta-analysis of observational studies (Bosco et al 2014)
  • 38% increase risk of CVD associated with taking ADT
  • 50% increase risk of death from CVD associated with ADT
  • Multi-morbidity in men with prostate cancer and CVD (ASCO 2015)
Primary Research Question

Primary Objective

To test if a community pharmacy led personalised risk assessment and lifestyle prescription for men with prostate cancer increases their physical activity and subsequent health.
Secondary Objectives

• To assess if the intervention improves patient activation.
• To identify the factors that influence men to make changes to their lifestyle.
• To test the acceptability of the Healthy Living Pharmacy environment.
• To identify the components of a successful community-pharmacy led approach.
• To identify costs for men and services

• Phase 1 = 90 men at Surrey and Newcastle

• Phase 2 = 144 men in Portsmouth
Cardiovascular Risk and prostate Cancer

• How does prostate cancer affect your cardiovascular health?
• So what does this mean for you?
Cardiovascular disease risk & events

Testosterone

Insulin

Brain (stroke)
Coronary heart disease (heart attack)
Peripheral vascular disease (amputation)
Treatment for prostate cancer

Testosterone suppressing drugs

Fat cells

Progenitor cell

Muscle cells

Insulin Resistance

Cardiovascular Disease

Fat mass

Muscle mass
Origin of Cardio-metabolic Risk?

Excess calories
(increased intake +/- reduced energy expenditure)

Subcutaneous stores overwhelmed
(genes, ethnicity, ageing)

FAT
‘Spill over’

Adapted from: Sattar, N & Gill JM (2014) *BMC Med* 12, 123
Tailoring dietary changes to modify CVD risk

CVD Risk Factors

Blood cholesterol

Body weight

Body composition (%fat %muscle)

Cardio-metabolic risk

Blood pressure

Energy restricted diet

The DASH Diet
AHA Promoted to Stop Hypertension
**Measures of body weight and shape in relation to CVD risk**

**Body mass index** \((\text{BMI} = \frac{\text{wgt}}{h^2})\)

- Measure of being overweight (>25), obese (>30), or morbidly obese (>40)
- Takes no account of body composition

**Waist:Hip ratio**

- Stronger discriminator of central obesity and cardiovascular risk

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**Same BMI!**

Android

Gynoid

Stronger discriminator of central obesity and cardiovascular risk
Roles of Blood Cholesterol in Cardiovascular Disease

Atherosclerosis

HDL-cholesterol

LDL-cholesterol
Cardiovascular Score by QRISK2 Calculator

Risk of heart attack or stroke

7%

Risk of heart attack or stroke

27%

Risk of heart attack or stroke

47%

QRISK 2 Score (%)
Risk Management & Treatment: Priorities

• Reduce excess body weight/fat
• Reduce existing cardio-metabolic risk factors
• Reduce sarcopenia (muscle loss)
### Key Principles of Dietary Approach

<table>
<thead>
<tr>
<th>Key principles to reduce CVD risk</th>
<th>Mediterranean diet</th>
<th>DASH diet</th>
<th>Portfolio diet</th>
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<td>Plant-based</td>
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<td>Rich in fruit and vegetables</td>
<td>Low-fat dairy products</td>
<td>Soy protein</td>
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<td></td>
<td>Rich in nuts and oily fish</td>
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<td>Viscous fibres</td>
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<td>Moderate intakes of poultry</td>
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<td>Low intakes of red and processed meat</td>
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<td>Low intakes of sweet foods</td>
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<td>Discourages intakes of fizzy drinks, spreadable fats and processed and red meats</td>
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**‘Groups 1 & 2 Plus’**

Prescription to include more proteins to prevent further muscle loss (sarcopenia)
Physical activity and impact on prostate cancer

Fitness important

• For adults, at least 150 minutes (2½ hours) of moderate intensity activity (in bouts of 10 minutes or more) a week...

• or 75 minutes of vigorous intensity activity spread across the week...

• or combinations of moderate and vigorous intensity activity

• Adults should also undertake physical activity to improve muscle strength on at least two days a week
Physical activity and exercise after prostate cancer

- Aerobic Exercise
- Strengthening & Toning Exercises
- Joint Mobility & Flexibility
- Balance & Coordination

EXERCISE PROGRAMME
Aerobic Exercise
Strengthening and toning
Joint mobility, flexibility, Balance & coordination