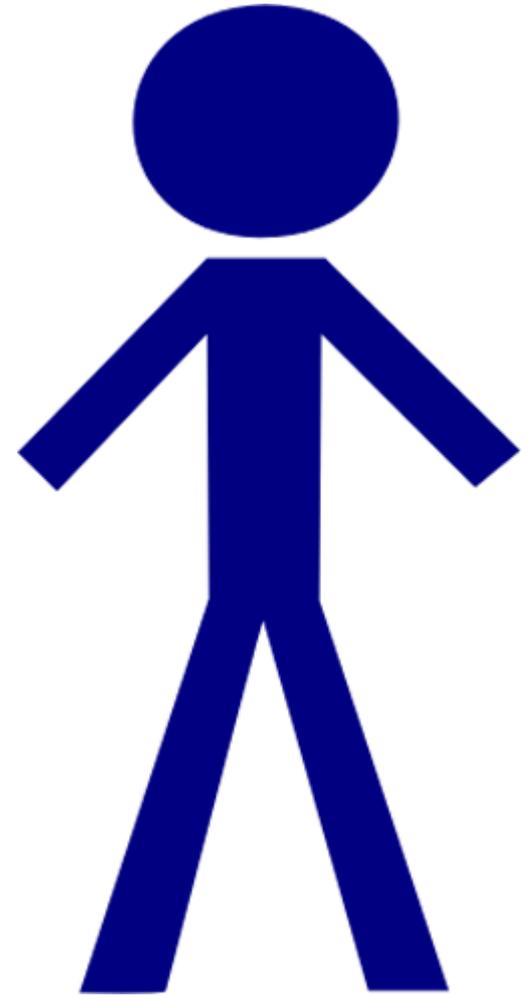


Prostate Cancer and Diet

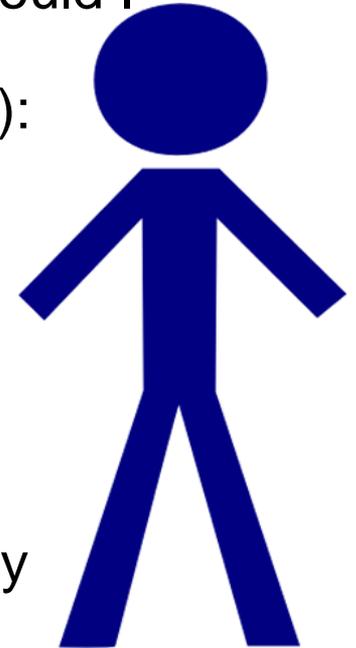
A talk for the Prostate Cancer
Cardiff Support Group
4 July 2011

Jane Frank BA (hons), DipION



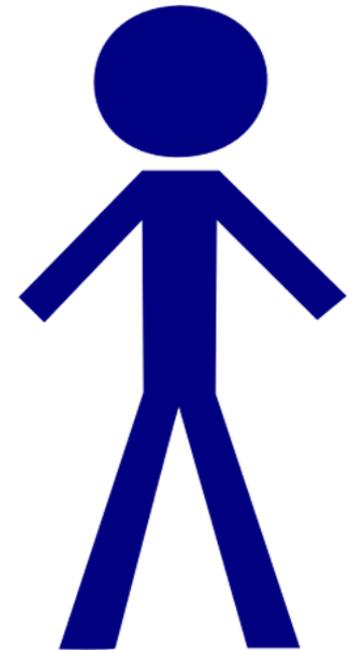
Why focus on diet?

- Huge body of research on the association between diet and prostate cancer risk/prevention
- A diagnosis of cancer often leads to lifestyle changes (diet, exercise etc) and often these questions:
 - if a certain food is associated with higher risk, should I avoid it?
 - If a food is associated with cancer prevention, should I eat more of it?
- Prostate Cancer Charity First National Survey (2005): 34% of 1143 men changed their diet after diagnosis
- One of the charity's top 5 research priorities is to help men regain a sense of control by things like changing diet, having complementary therapies or taking exercise. (paper for National Cancer Survivorship Initiative, 2009)
- Investigating what men are currently doing to help themselves, such as diet, was considered to be a key research area.



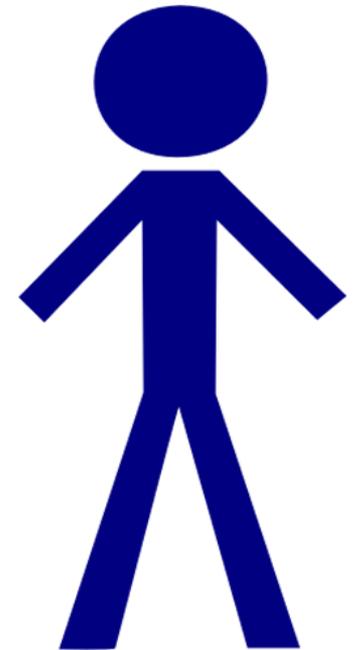
Dietary factors and PCa risk

- In large population studies all over the world, high fat diets, red meat and dairy products are associated with increased risk of PCa
- High-temperature cooking (eg barbecued and processed meat) is especially dangerous
- What is it about meat?
 - Trans-fats formed in high temperature cooking
 - Arachidonic acid in meat (increases inflammation)
 - Increases levels of insulin-like growth factor 1 (IGF-1), which is associated with increased risk



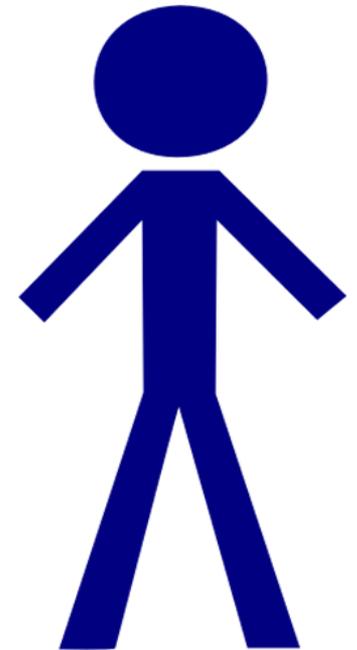
Dietary factors and PCa risk cont.

- Dairy intake may increase PCa risk
- Naturally occurring IGF-1 found in dairy products
- EPIC study has found that high intake of dairy protein and calcium from dairy products, and high serum concentration of IGF-1 were associated with increased risk of PCa (Gonzalez & Riboli, 2010)
- High calcium intake suppresses vitamin D (1,25 dihydroxy vitamin D3), which may in turn increase cancer cell growth in the prostate, but the evidence is weak.



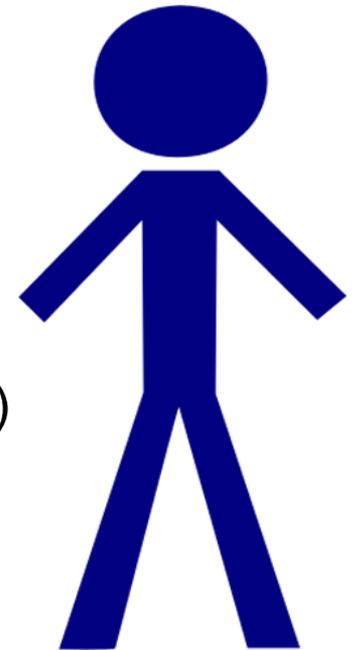
Dietary factors and PCa risk cont.

- A high consumption of vegetables (especially cruciferous vegetables) associated with lower PCa risk. Cohen et al (2000) found that men consuming fewer than 7 servings of vegetables per week had a 35% increased risk of PCa compared with those eating more than 28 servings/week
- For advanced cancers in older men, which probably started decades in the past, recent dietary intakes of cruciferous vegetables may be irrelevant – it's probably intake early in life that counts
- No association found between fruit consumption *per se* and PCa risk in Cohen or in other large studies.



Dietary factors and risk of progression/metastasis

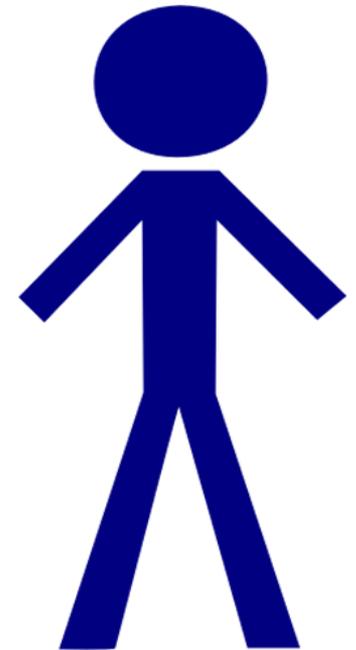
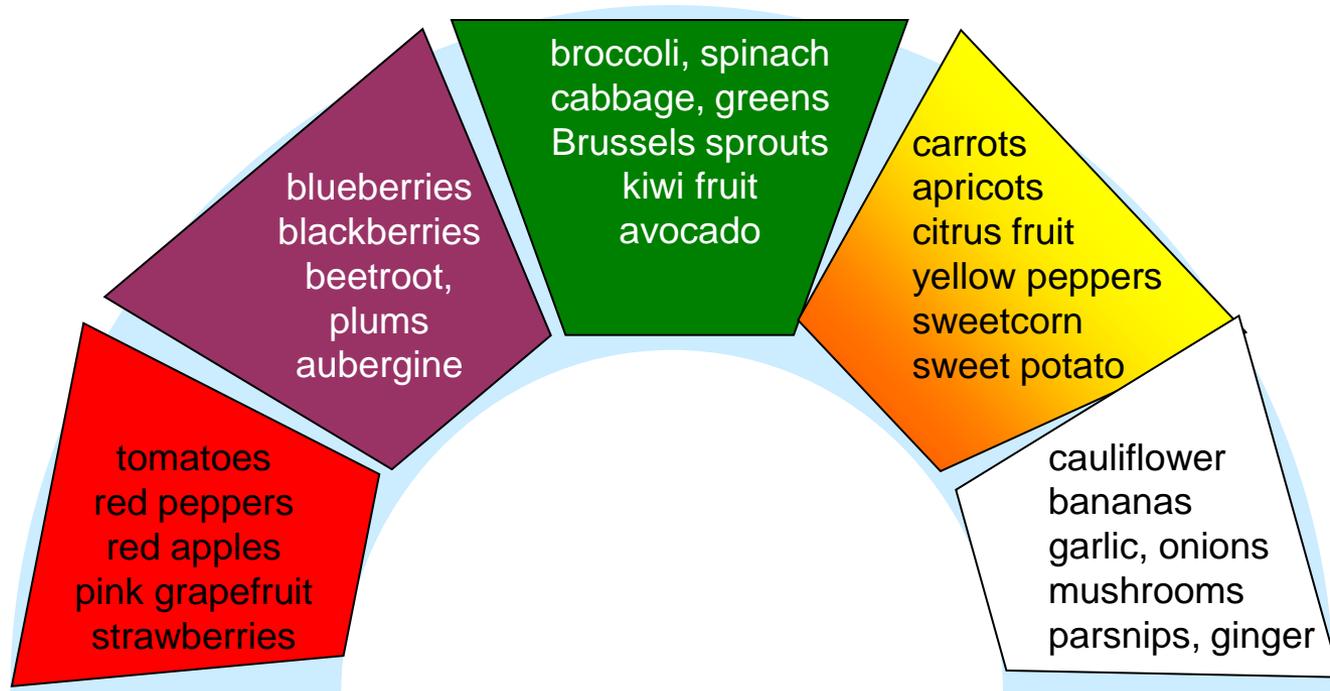
- But what if you already have prostate cancer? Or if you've been treated and are in remission?
- Firstly, because cancer survivors may be at increased risk for other cancers, cardiovascular disease, diabetes and osteoporosis, the guidelines for preventing those diseases are especially important for them
- Many studies show that changing diet *can* help PCa survivors, even after diagnosis, e.g. review by Van Patten et al (2008).
- Certain foods *may* protect against PCa progression or recurrence.
- Emerging evidence shows that post-diagnostic diet *may* influence progression (Mucci & Giovannucci 2010)
- It's one thing over which you have total control. Changing your diet empowers you to take charge.



What should I eat more of?

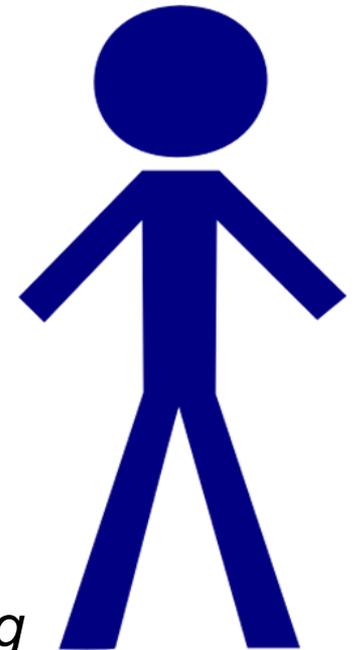
Overall fruit and vegetables (especially veg):
AT LEAST 4 veg and up to 2 fruit per day

Choose a rainbow every day:



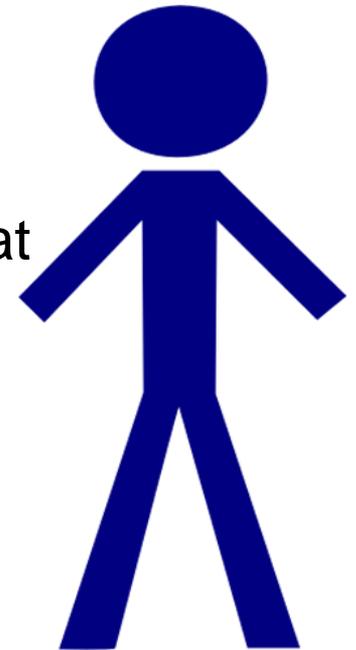
More fruit & veg, but why?

- A plant-based diet, low in fat and high in fibre, may offer survival benefits for prostate cancer (Ferdowsian 2007).
- Fruit and veg contain vitamins, minerals, fibre, antioxidants, phytoestrogens etc: all cancer-protective
- Nguyen et al (2006): 6 month pilot clinical trial - patients with recurrent PCa. Average intake of vegetables increased from 2.8 servings/d to 5.0 and 4.8 servings/d at 3 and 6 months, respectively. The rate of PSA rise, an indicator of disease progression, decreased as vegetable intake increased.
- *NB: After pelvic radiotherapy, fibre may not be tolerated – the answer is to juice your fruit and veg*



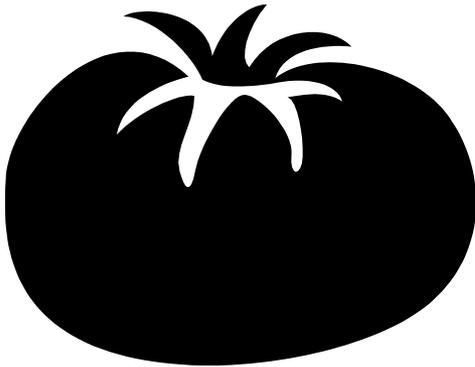
What should I eat more of, and why?

- Cruciferous vegetables (broccoli, cauliflower, sprouts, kale, cabbage, bok choy etc)
- Kirsh et al (2007) – large survey of 29,000 men, of whom 1,300 developed PCa – found that a high intake of cruciferous vegetables was associated with reduced risk of aggressive prostate cancer, particularly extraprostatic disease.
- Contain:
 - Indole-3-carbinol (cancer-fighting)
 - Sulforophane (cancer-fighting)
- Recommendation: eat at least one portion daily



What should I eat more of, and why?

Cooked tomatoes



Kukuk et al (2002): 26 men before radical prostatectomy: half given lycopene supplement for 3 weeks. Tumours shrank, PSA declined compared to control group.
Haseen et al (2009): systematic review found an inverse association between lycopene intake and PSA levels in 6 studies, and lycopene assoc. with fewer cancer-related symptoms.

Contain:

- lycopene (cancer-fighting)
- Cooking makes lycopene more bio-available.
- Recommendation: eat at least one portion daily. Try tomato sauce or soup, grilled or baked tomatoes, add tomato puree to stews etc
- Lycopene also in watermelon & pink grapefruit

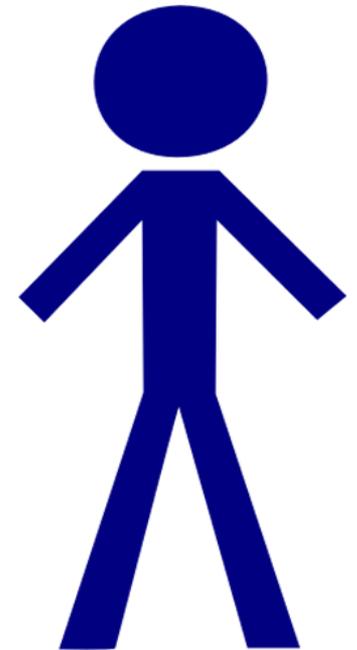
What should I eat more of, and why?

- Green tea
- Contains antioxidant polyphenols, principally epigallocatechin gallate (EGCG) – may reduce risk of advanced PCa
- Recommendation: five cups per day
- Drink brewed but weak whole leaf green tea (green tea bags OK but loose tea is better)
- Also try pure pomegranate juice (also contains polyphenols) 200ml daily (but not if on Warfarin!)



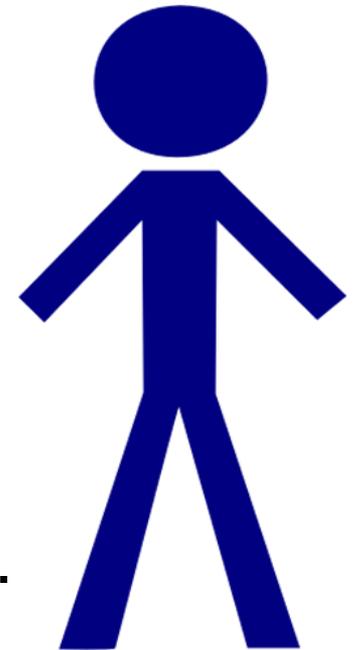
What should I eat more of, and why?

- Oily fish, fresh, tinned or frozen (eg salmon, sardines/pilchards, mackerel, tuna (not tinned), trout, sea bass. Also flax seed and flax oil.
- Contain Omega 3 fatty acids – anti-inflammatory and anti-cancer
- Ref: Augustsson et al (2003) 12 yr study of 47,000 men. Eating oily fish 3/wk decreased risk of PCa especially metastatic cancer.
- Ref: Chavarro et al (2008), Survival analysis among men with PCa showed that those eating fish 5/wk had a 48% lower risk of dying of PCa than men consuming fish less than 1/wk
- Recommendation: eat 2-3 portions oily fish per week, and/or flaxseed/flax oil daily



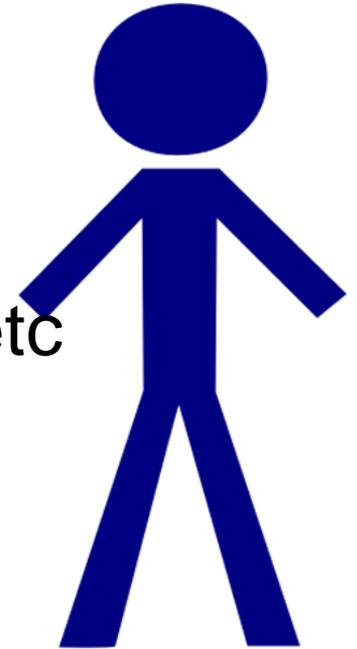
What should I eat more of, and why?

- Soya products (traditional ones only), eg miso, tempeh, tofu
- Soya contains:
 - Isoflavones – genistein and diadzein. Block oestrogen receptors benignly
- Recommendation: eat 2-3 portions per week
- Eat sparingly: modern soya foods such as soya milk, soya yoghurts
- Evidence for soya still uncertain – protective effect may depend on baseline soya intake, i.e. if you have been eating it all your life, eg Japanese men. May not apply to Westerners.



What should I eat more of, and why?

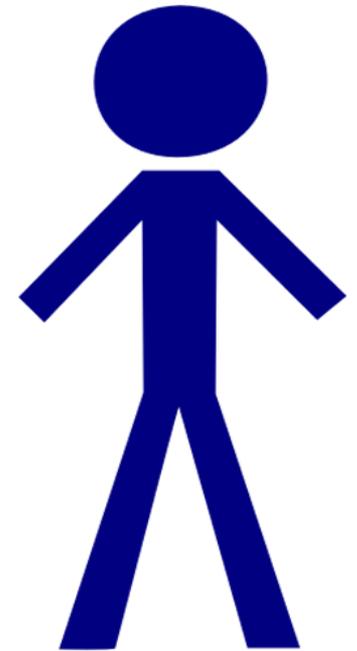
- Other pulses (lentils and beans, chickpeas etc – dried, tinned or frozen)
- Contain:
 - Phytoestrogens (not as many or as strong as soya, but still have some effect)
 - Also good source of fibre, minerals etc
- Recommendation:
eat 2-3 portions per week



What should I eat more of, and why?

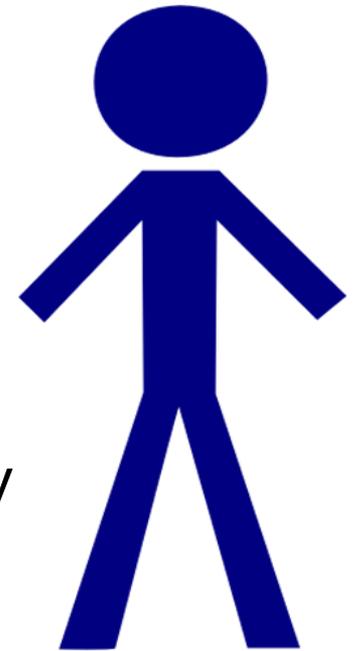


- Allium vegetables (leeks, onions, garlic)
- Contain:
 - Allicin in garlic, organosulphur compounds, flavonoids (quercetin –anti-inflammatory)
- limited evidence but all favourable (certainly linked to reduced risk)
- Recommendation: eat daily



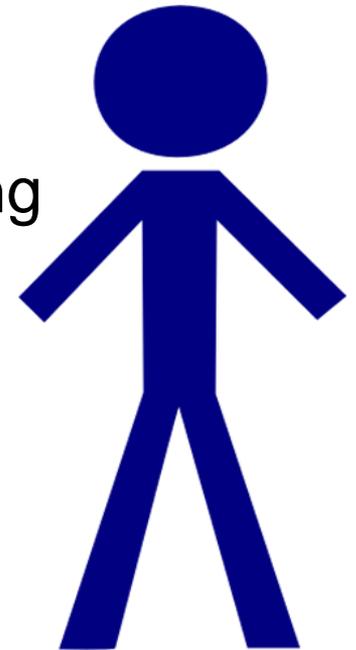
An example of a study on diet in PCa survivors (Chan et al, 2006)

- The Health Professionals Follow-up Study (1200 men over 14 years).
- Dietary surveys performed both before and after diagnosis.
- examined consumption of red meat, vegetables, fruits, milk, tomatoes, tomato sauce, and fish *after diagnosis*, as predictors of progression.
- Consumption of fish and tomato sauce (2 servings/week) offered some protection against PCa recurrence and progression.
- Consumption of milk was associated with very slightly *increased* risk.



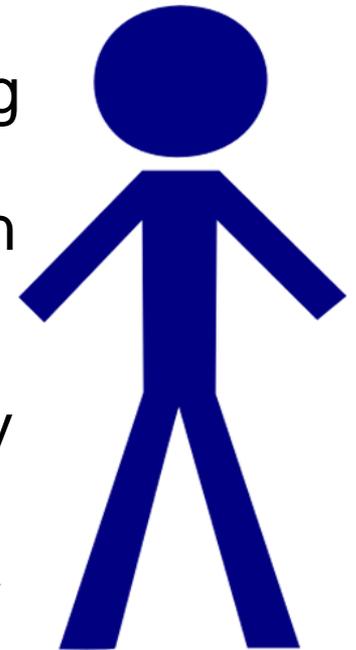
The bottom line

- Ma & Chapman (2009): “The current data are indicative that a diet low in fat, high in vegetables and fruits, and avoiding high energy intake, excessive meat, excessive dairy products and calcium intake, is possibly effective in preventing PCa.”
- “The dietary recommendations for patients diagnosed with PCa are similar to those aiming to reduce their risk of PCa.”
- “However, caution must be taken to ensure that members of the public do not take excessive amounts of dietary supplements because there may be adverse affects associated with their overconsumption.”



What about supplements?

- Recent trials (SELECT, SU-VI-MAX, Physicians Health Trial) have found that using single nutrients is not always wise or safe
- Protective effect of selenium (Se) depends on Se status to begin with, and also on genetic profile. Can be pro-oxidant for some.
- High amounts of zinc and/or calcium over long period can increase risk of advanced PCa.
- Lycopene OK, but probably better in food than in tablet form
- Saw palmetto OK and safe for BPH, but appears to have no effect on PCa risk (Brasky et al, 2011)
- Interesting new studies on vitamin D and PCa (eg Newsom-Davis et al, 2009)

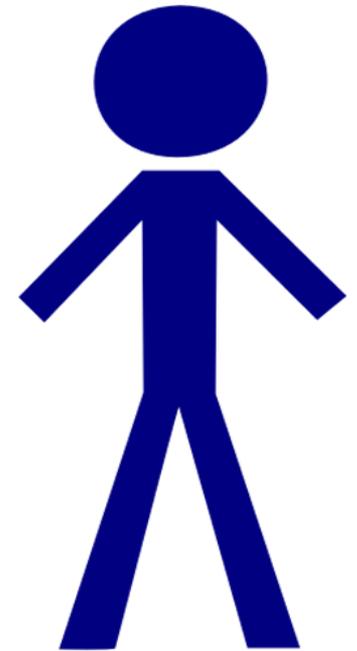


Suggested dietary strategy for prostate cancer survivors

Food	Per day	Per week
Vegetables, total...	At least 4 portions	
...Of which cruciferous veg (eg broccoli, cauliflower, cabbage, Brussels sprouts etc)	At least 1	
... and onions or garlic	At least 1	
... and cooked tomatoes	At least 1	
Fruit	2 portions	
Green tea	5 cups	
Oily fish, eg salmon, sardines, mackerel		2-3 portions
Flax seed/flax oil	1 tbsp	
Soya products, eg tofu, miso, tempeh		2-3 portions
Other pulses, eg chickpeas, lentils, kidney beans		2-3 portions
Red meat		Not more than 1 portion
Dairy products		occasional
Alcohol		occasional, pref red wine
Sugar (includes hidden sugars in baked goods etc as well as added sugar in drinks)		Special occasions only (eg birthday cake)

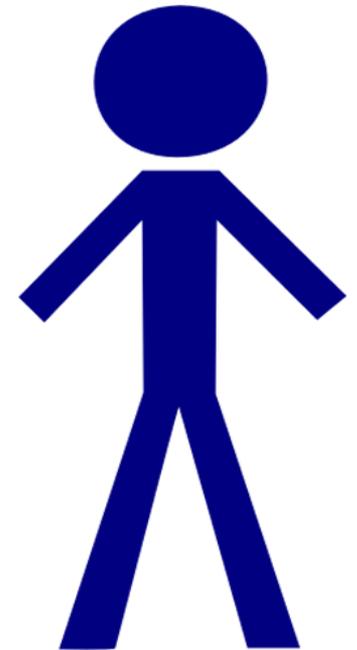
My research

- ‘Dietary advice for prostate cancer patients: information sources used, range of advice offered and patient uptake: a questionnaire survey’
- Aims: to determine to what extent and by what methods relevant dietary advice reaches men with PCa, and to establish whether and how receipt of any such advice influences their diet.



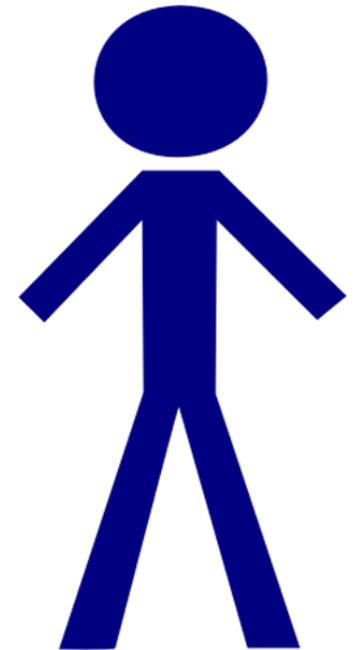
My research: statistics

- 181 questionnaires mailed, yielded 130 respondents
- Age range 45 to 90 (mean age = 69.5 yrs).
- 49% diagnosed less than 5 yrs ago, 51% more than 5 yrs ago (mean age at diagnosis = 64.1 yrs).
- Median PSA on diagnosis = 14
- 33 (25.4%) had a family history of PCa
- 75 had or were having hormone therapy, 72 radiotherapy, 37 surgery, 10 brachytherapy, 7 active surveillance, 4 HIFU (high intensity focused ultrasound), 3 chemotherapy, cryotherapy etc.



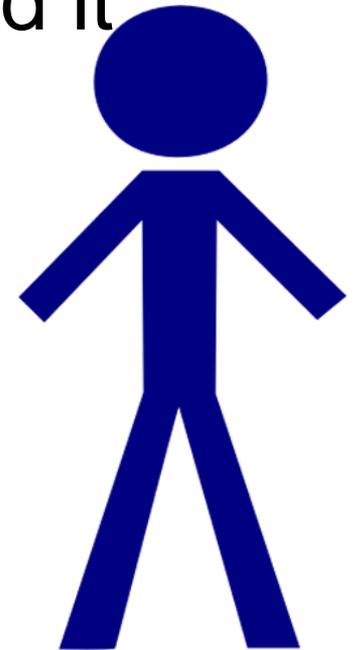
Dietary advice on diagnosis

- 34 patients received dietary advice on diagnosis:
 - 13 from oncologists, urologists & GPs
 - 5 from dietitians/nutritionists
 - 10 from radiotherapists, nurses etc
 - 3 from CAM practitioners
 - 3 did not report source of advice
- 86 patients sought advice elsewhere:
PCa charities (51), books (49),
newspapers/magazines (23), internet
(40), friends & family (14)



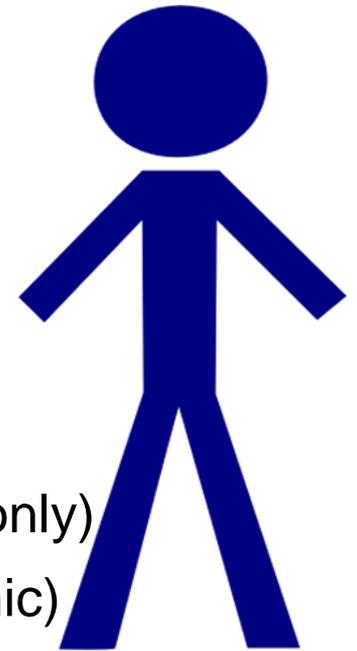
Dietary changes – possibly detrimental foods

- 84 people changed their diet at or shortly after diagnosis
- 28 reduced red meat, 14 eliminated it
- 22 reduced total fat
- 22 reduced dairy products, 28 eliminated them
- Other changes included reducing alcohol, sugar, caffeine and eggs*



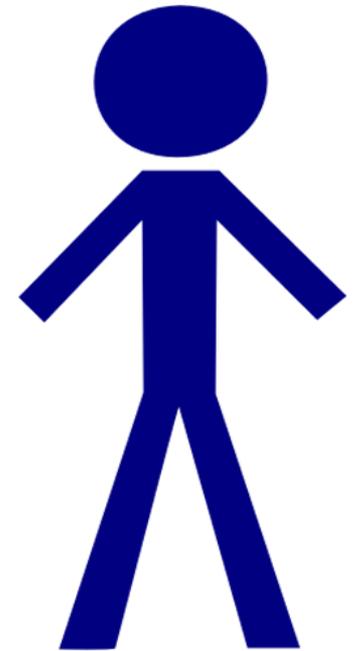
Dietary changes – possibly beneficial foods

- 31 increased fruit and veg (10 increased fruit only)
- 17 introduced or increased soya products
- 15 increased fish
- 16 increased tomatoes
- 15 started taking supplements
- 13 started drinking green tea
- 10 started drinking pomegranate juice
- 9 ate more nuts and seeds
- 6 drank cranberry juice
- 4 increased total fluids (2 used filtered/boiled water only)
- 3 ate more organic produce (3 others were all organic)



Association between dietary change and other factors

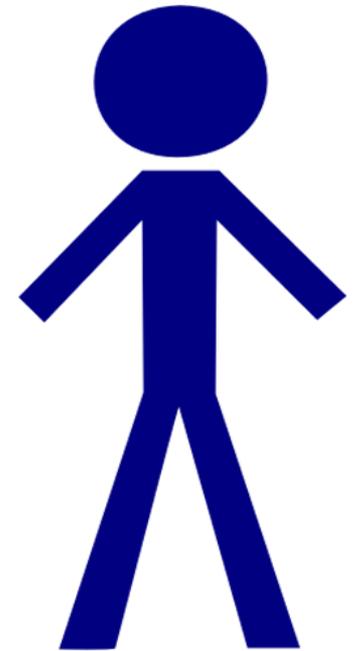
- a higher proportion of those recruited via the PCa charities rather than by other means had changed their diets
- Those in receipt of hormone therapy, as opposed to other forms of treatment, were more likely to have changed their diet
- These were both statistically significant findings



Association between dietary change and other factors

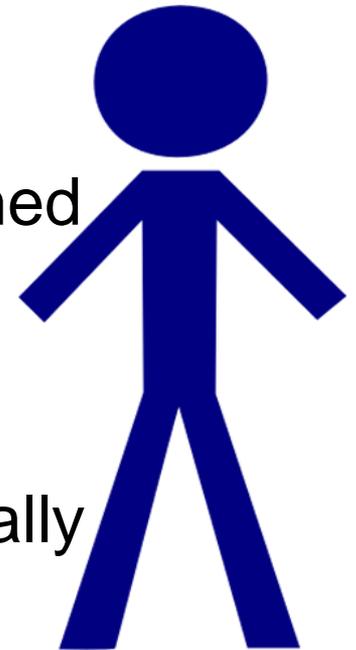
No statistically significant association found between dietary change and:

- age range
- occupational class
- presence of other medical conditions
- PSA and Gleason score at diagnosis
- time since diagnosis
- age at diagnosis



Diet diaries: did being given dietary advice on diagnosis have an effect?

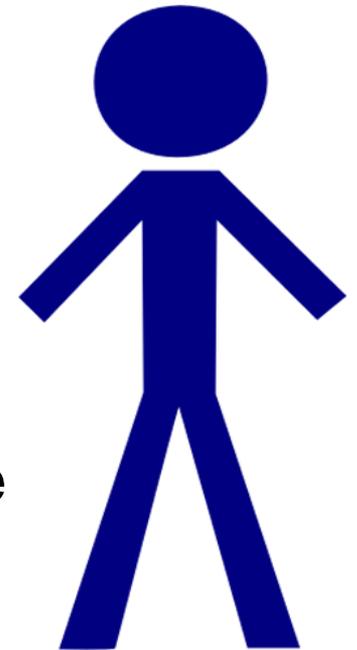
- Those who *had* received advice at diagnosis consumed a mean of 3.71 portions of 'bad' foods. Those who had not received advice consumed a mean of 3.67 portions.
- Those who *had* received advice reported consuming a mean of 3.68 'good' foods. Those who *had not* received advice consumed a mean of 3.78 portions.
- Not a statistically significant difference
- Therefore the receipt of dietary advice at diagnosis was not associated with a potentially more beneficial diet at present.



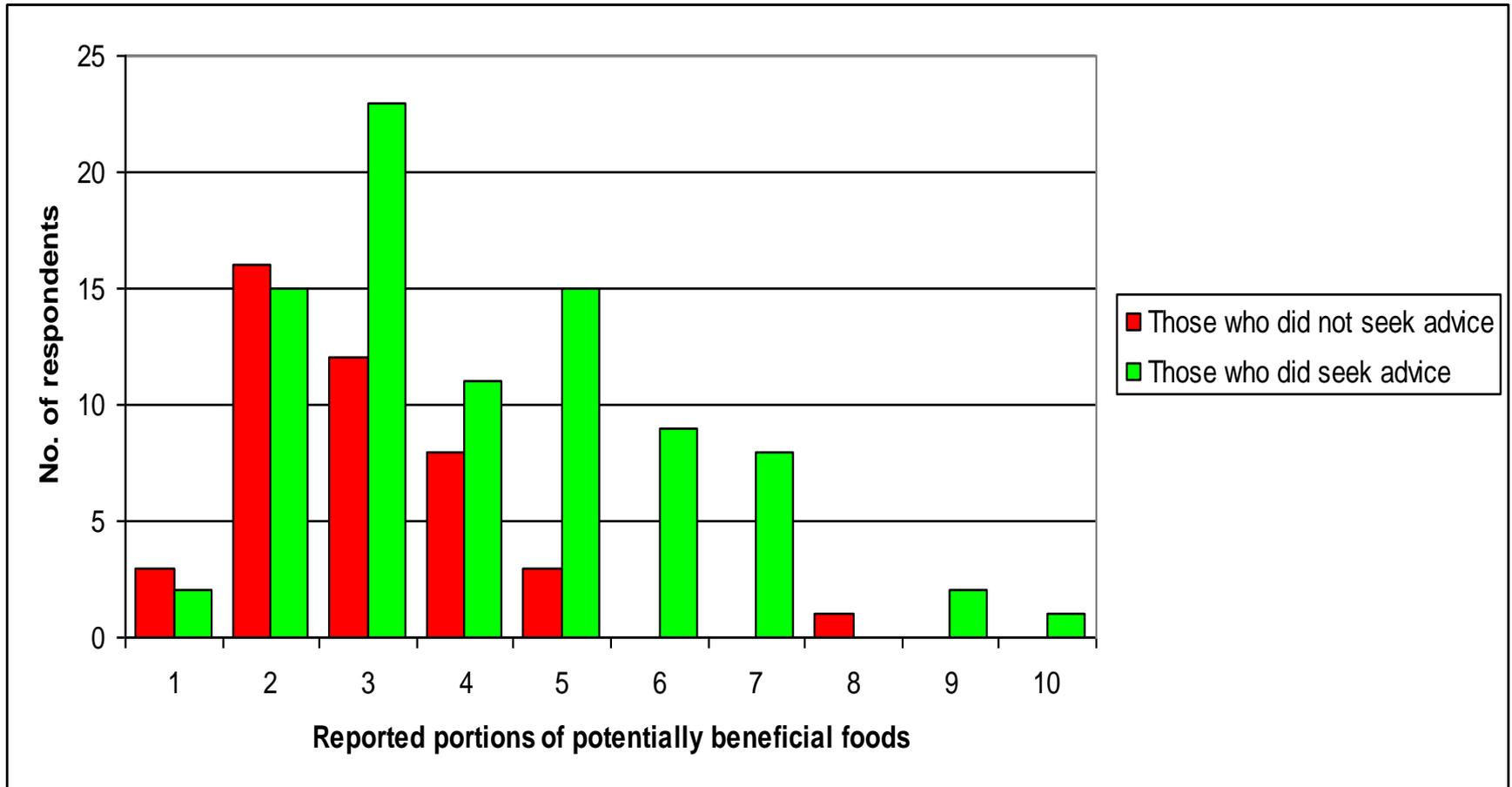
Diet diaries: did independent seeking of dietary advice have an effect?

However...

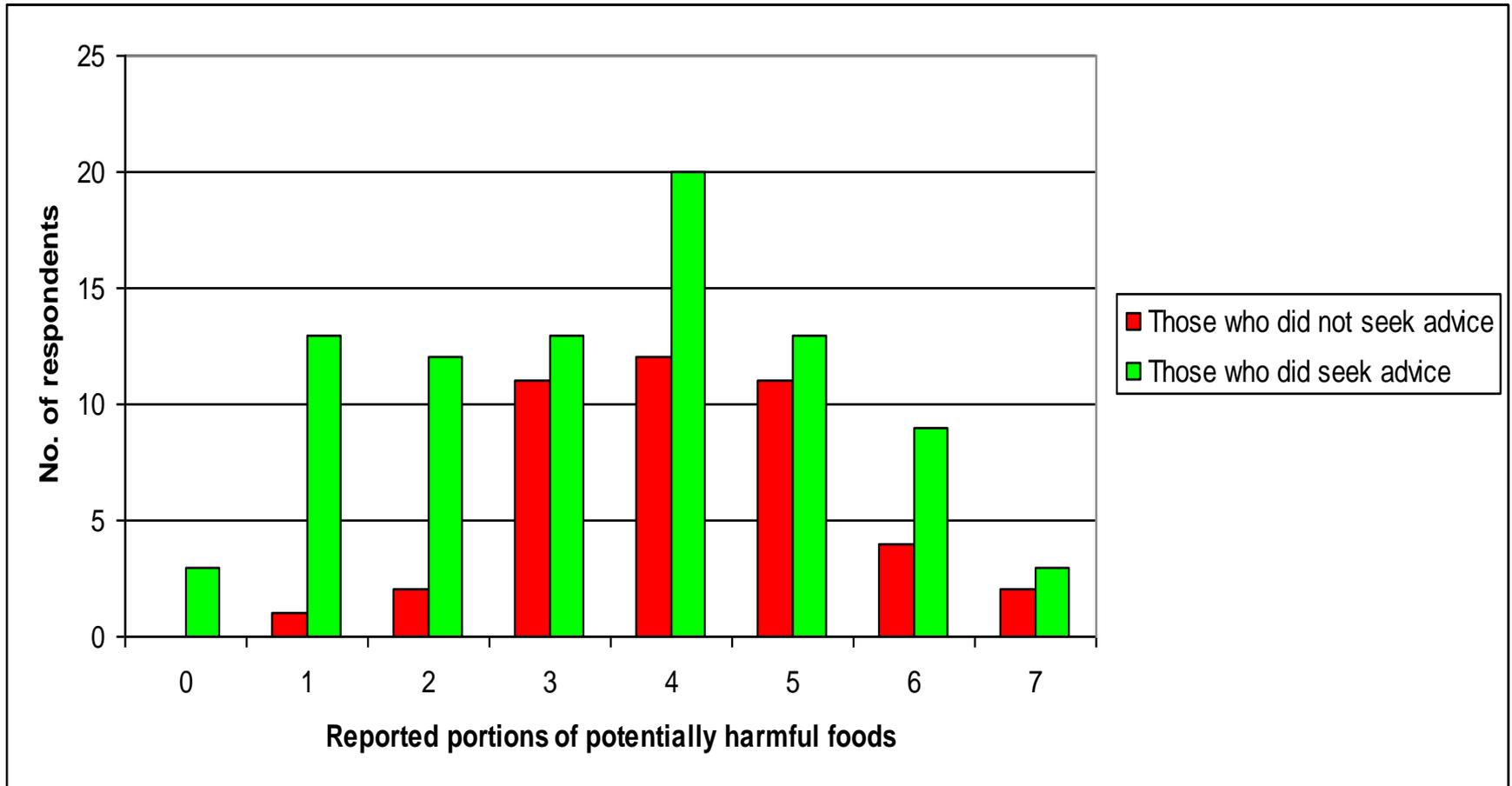
- According to the 24 hour diet diaries, those who *had* sought advice independently after diagnosis consumed a mean of 4.16 portions of 'good' foods compared with only 2.93 for those who *had not* sought advice
- And the values for those who consumed 'bad' foods were 3.44 and 4.16 portions respectively.
- These are both statistically significant
- Thus, the acquisition of dietary advice by independent means is associated with a more beneficial diet at present.



Diet diaries: did independent seeking for dietary advice have an effect?



Diet diaries: did independent seeking for dietary advice have an effect?



Conclusions

- Research is ongoing.
- More and more attention is being paid to post-diagnostic diet. Watch for work by Giovannucci, Chan, Demark-Wahnefried
- In the meantime...
 - keep to an ideal weight
 - follow the guidelines for cardiovascular protection
 - incorporate as many of the foods known to be protective of PCa as you can – it can't hurt and it may very well help.

