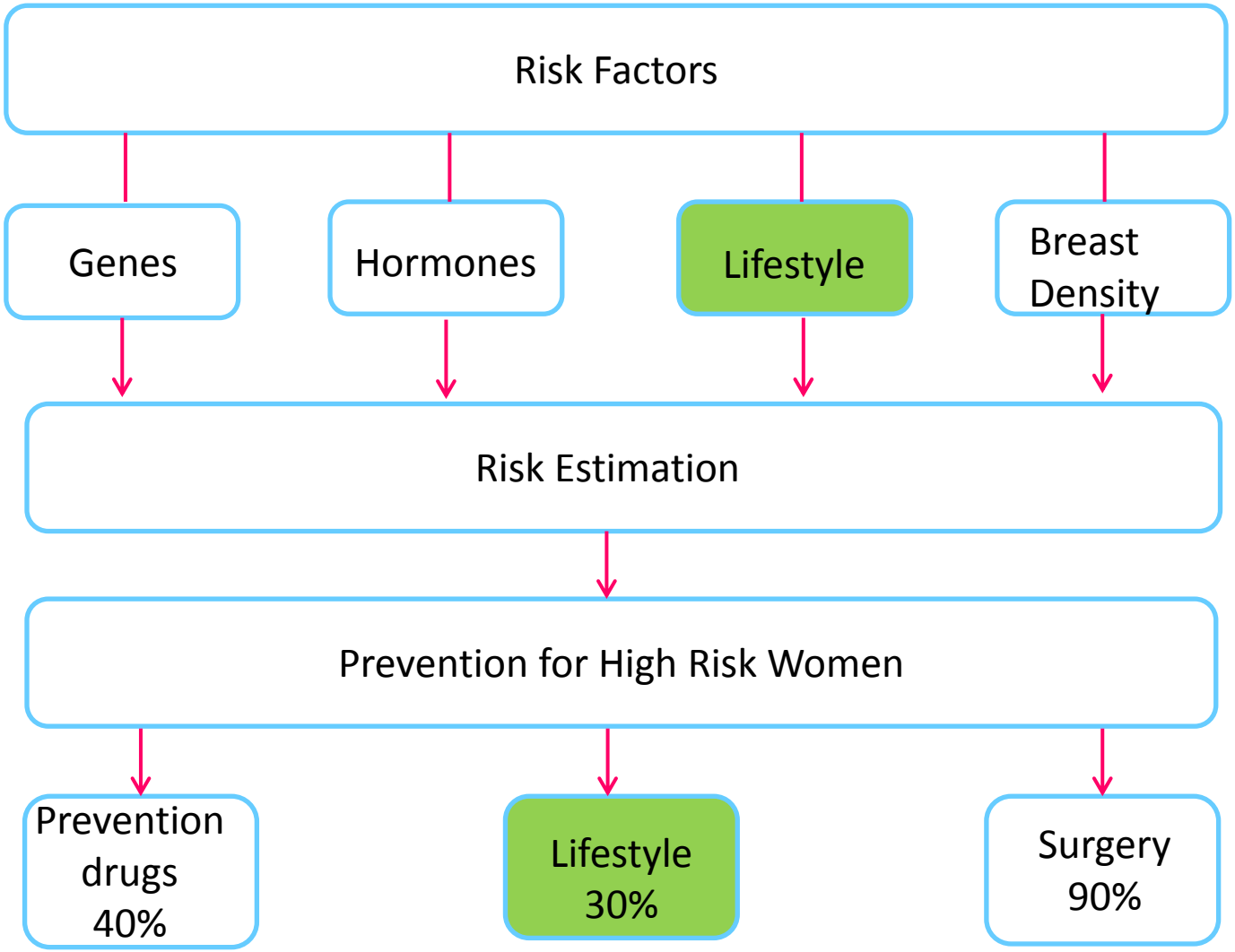
Breast Cancer Prevention Programme



30% of Breast Cancers are linked to unhealthy lifestyles

Lack of exercise

11% increase risk sedentary vs 150 mins / week

Weight gain /obesity

11% increase risk per 5 kg

Alcohol

5% increase risk per unit of alcohol

Parkin DM, Br J Cancer. 2011;105 Suppl 2:S77-81.

Lifestyle & breast cancer risk: observational data

	Pre-menopausal	Post-menopausal	ER positive	ER negative	Family history	BRCA1	BRCA2
Weight & adiposity	Mixed effects	✓✓	✓✓	✓✓	✓✓	* Mixed effects	* Mixed effects
Lack of exercise	✓✓	✓✓	✓✓	✓✓	✓✓	* Mixed effects	* Mixed effects
Alcohol	✓✓	✓✓	✓✓	✓✓	✓✓	* Mixed effects	* Mixed effects
Smoking during adolescence / early adulthood	✓✓	✓✓	✓✓	No data	No data	* Mixed effects	* Mixed effects

✓✓ Association in 3 or more observational studies

*Low quality case control data

Harvie, ASCO education book 2015

Breast Cancer prevention: Diet & lifestyle

Mechanisms

How do energy restriction and exercise reduce breast cancer risk?

Changing behaviours

How can we introduce lifestyle prevention of BC in the population ?

Intermittent dieting

Key findings & achievements 2006 -

- First to show that weight loss reduced breast cancer risk (Iowa Women's Health Study, 2006).
- Developed the 2 day diet to make weight loss easier
- 2 Day diet published 2013 (+2 sequels) Total sales ~ 350,000
- Energy restriction induces breast differentiation
- Giving BC risk information engages women to change their lifestyle
- Call centre & internet promotes lifestyle change (PROCAS lifestyle and B-AHEAD studies)

Key aims for the next 5-10 years

Can't do a trial of weight loss & breast cancer risk as this would involve 28,000 – 38,000 women studied for 10 years !

- Implement lifestyle prevention of breast cancer to the population

- Undertake mechanistic studies to understand how energy restriction/exercise act on the breast to reduce risk

Why do we need to understand mechanisms of energy restriction ?

- To strengthen the lifestyle prevention message
- To define BC risk markers which respond to lifestyle (we need a “cholesterol” to monitor lifestyle prevention programmes)
- To inform potential targets for energy restriction mimetic agents

“I have one pill that blocks fat, one pill that blocks carbs, and one pill that blocks the kitchen door.”

How can we achieve lifestyle change ?

Population approach

- Changing obesity environment
- Regulating food industry
- Food labelling, advertising
- Cost of healthy foods, sugar/fat tax
- Consistent clear public health campaigns

Individual approach

- Low cost scalable programmes to promote behaviour change

Adapted from http://www.wcrf.org/int/policy/nourishing-framework

We need low cost scaleable weight loss programmes

~60,000 overweight / obese high risk women in FHCs
~1.5 million overweight / obese high risk women in UK breast screening

	% success (> 5% weight loss at 1 year)	Cost per patient
Leaflet	5-10%	£ 2
GP (practice nurse)	20%	£ 150
Weight watchers (on prescription)	30%	£ 150
Diabetes prevention programme	35%	£ 200
Our phone & internet	65%	£ 150

Can we prevent “disease” in the national breast screening programme ?

Common Risk Factors

	Age	Smoking	Weight	Lack of exercise	Diet	Attributable to lifestyle
Breast cancer	✓ ✓ ✓	✓	✓ ✓ ✓	✓ ✓ ✓	✓	30%
Heart disease	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	70%
Diabetes Type 2	✓ ✓ ✓	✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	90%
Dementia	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓ ✓	✓ ✓	50%

Background

- NHSBSP screens 70% of women aged 47 – 73 years for early diagnosis but does not currently tackle BC prevention

- 30% of breast cancer potentially prevented lifestyle factors
  Howell, Harvie Breast Cancer Res,2014 ;16:446
- Unhealthy lifestyles prevalent amongst NHSBSP attendees i.e. 60% overweight
- Previously undiagnosed risk factors for CVD and diabetes amongst women in the NHSBSP (15% ≥ 10% CVD risk), 6% pre-diabetes
- Risk communication theory: Including disease risk information on several conditions is likely to be personally relevant to more women and more likely to engage in prevention