

## SHORT COMMUNICATION

# Breast cancer prevention in the developing world

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Breast cancer is already by far the commonest cancer in women worldwide, with an estimated 1.4 million cases in 2008 [1]. The rates have been increasing steadily and there is every indication that they will continue to do so over the next few decades. The greatest increases are in the developing world, where rates have traditionally been low, but with changing lifestyle they look destined to approach rates seen in western countries. In addition to this, the lifespan of women in the developing world is also increasing and so far more women are reaching an age where breast cancer rates are high. Thus, the increase in breast cancer incidence, to a large extent, reflects the major successes achieved in the developing world in combating infectious diseases and maternal deaths from childbirth.

There is little that can be done to deal with this success in preventing other diseases except to redirect more treatment and palliative resources to the problem, and to try to find affordable and acceptable methods of providing screening programmes. However, there is some scope to try to hold in check the results of lifestyle changes, which are leading to the increase in age-specific breast cancer rates. Thus, three broad approaches are possible within the screening and prevention arena: lifestyle changes to reduce or control increases in incidence rates; preventive therapy in high risk women; and breast screening.

### Lifestyle

Much of the difference in breast cancer incidence between developed and developing countries can be explained by lifestyle differences. In particular, it has been estimated that differences in childbirth patterns and breast feeding can explain about a two-fold lower age-specific incidence in the developing world, where a woman starts childbearing at a young age, has a large family and breast feeds each child for 1 to 2 years. Certainly there are enough other problems with large

families to not recommend the maintenance of this practice, but continuing a high level of breast feeding offers one possible hope for containing the increase in breast cancer. It has been estimated from a large overview [2] that the relative risk of breast cancer is reduced by 4.3% for every cumulative year of breast feeding, so 2 to 3 years of lifetime breast feeding could reduce incidence by 10% or so. Another concern, which is important worldwide, are increases in obesity and reductions in physical activity. Much of the developing world has moved to a starchy, grain-based diet, which has led to several health issues, notably a skyrocketing of type 2 diabetes. However, its impact on post-menopausal breast cancer has yet to be fully seen. Estimates suggest post-menopausal breast cancer incidence increases by about 1% per kilogram of adult weight [3], so that a 20 kg or greater difference would have an important impact at a population level. Weight gain in middle age appears to be important [4], so programmes aimed at both childhood and adult weight control would be valuable.

Physical exercise is also a protective factor, with even modest amounts of moderate to vigorous activity (2 to 3 hours per week) having a 20 to 40% impact on incidence [5]. Control of alcohol consumption is also an issue, with an estimated relative risk increase of 7% for each drink consumed on a daily basis [6]. This is also a worldwide issue.

### Preventive therapy

Tamoxifen and raloxifene have both been shown to reduce the incidence of breast cancer by 30 to 40% and are licensed for prevention in some countries. However, they have significant toxicity and use needs to be focused on high risk subgroups. Identification of such subgroups is potentially difficult in developing countries, and this strategy is best reserved for the developed world until procedures for identifying high risk women are more completely developed.

### Screening

When practiced by well trained personnel, mammographic screening is effective at reducing mortality by 30 to 40%, albeit at the expense of some overdiagnosis and treatment. However, the costs and infrastructure required make this infeasible for many parts of the

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developing world (especially Africa), and only moderately resourced countries - for example, those in Eastern Europe - can seriously consider this now. At the other extreme, breast self-examination has proved to be ineffective [7,8] and should not be recommended. A promising approach being explored in a large trial in Mumbai (n = 150,000) is clinical breast examination by trained doctors and nurses [9]. This would appear feasible in low resource settings and the results of this trial are eagerly awaited.

### Conclusion

Large increases in the number of breast cancer patients are certain to occur in the next few decades, partly as a result of the success in eradicating infectious diseases and maternal deaths, but also due to the 'westernisation' of lifestyle with its attendant increase in an individual risk, especially in the post-menopausal period. Control of certain lifestyle factors, notably maintaining breast feeding, avoiding obesity, alcohol consumption, and maintaining a high level of physical activity, may help to control this last factor.

Mammographic screening may be useful in some areas where adequate resources exist, but is currently not viable for much of the developing world, and the results of the trial on clinical breast examination are awaited as a further possible approach. Providing adequate treatment facilities and palliation should be the current priorities.

### Competing interests

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