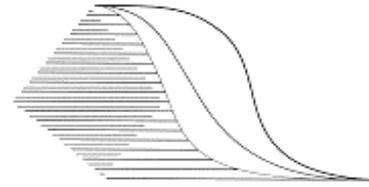


Centre for Health Services  
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**Normal bone mass, aging  
bodies, marketing of fear:  
Bone mineral density  
screening of well women**

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**Bone Mineral Density Screening of Well Women**

**Normal Bone Mass, Aging Bodies, Marketing of Fear:**

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**ABSTRACT**

Definitions of osteoporosis have become increasingly dependent on bone mineral density (BMD) measures. However, there are major limitations with this type of approach which promotes a medical reductionist perspective, contributes to the medicalization of normally aging women, and supports technological determinism. This paper takes a critical approach to needs

assessment. It examines the various interests being served through unchecked use of a diagnostic technology, and asks: ‘who needs this technological service?’.

Despite mounting evidence that BMD measures have a very low positive predictive value, entire cohorts of middle-aged and older women are labelled with their BMD measures. This is done for the sake of “early detection” and “better management” of “endocrine deficiency disorder”. The medicalization of yet another transition in the lives of women conforms to the bio-medical model and serves many private interests.

Beyond the labelling of entire cohorts, the early (and hence of necessity, repeated) use of this technology is being presented as the only hope for preventing bone fractures. The paper discusses serious ethical challenges in public health which remain to be identified and addressed.

It is concluded that the recently heightened profile of women’s health issues, such as osteoporosis, is based more on economic premises than on sound evidence from technology assessment. When the evidence on effectiveness clearly does not support current patterns of diffusion, a critical approach to needs-based health technology assessment is required so as to provide a broader perspective within which power relations and private interests can better be understood.

## INTRODUCTION

Whole population screening of women using densitometry has been widely discredited,<sup>1-3</sup> yet some still advocate bone mineral density (BMD) testing of all women at or near menopause presumably to prevent fragility fractures 25-40 years later. Technology assessment efforts to date have focused primarily on clinical effectiveness debates, estimating when to screen and how many fractures need to be prevented before the intervention is deemed to be cost-effective.<sup>4,5</sup> However, these studies do not explain why BMD testing may still seem appealing to both women and their health care providers.

In 1993, an industry-sponsored conference sanctioned by the World Health Organization (WHO) redefined osteoporosis strictly in terms of BMD thresholds.<sup>6</sup> The WHO definition establishes four thresholds based on reference populations of healthy young women; these are used for diagnosing osteoporosis and determining intervention. Unless women maintain bone mass at peak levels throughout their life span they will be labeled as ‘at risk’ or ‘diseased’. Using the WHO standards, 22% of all women over age 50 will be defined as having osteoporosis and 52% as having osteopenia.<sup>7</sup> There is no epidemiological basis to support the cut-offs used by the WHO study group; therefore the resulting epidemic observed in the last few years is more apparent than real.<sup>8</sup>

This paper examines issues beyond clinical effectiveness, the social, economic, and political contexts within which BMD testing has emerged, and delineates the forces behind its rapid diffusion in the western world. The objective of this paper is to make explicit the assumptions about aging women’s bodies that drive the use of BMD testing, and to identify marketing strategies which create and capitalize on women’s fear of aging.

## **METHODS**

A comprehensive evaluation framework for investigative technologies was developed, extending previous work in this area<sup>9</sup> which incorporates the assessment of clinical research on screening tests with the epidemiological, economic and social contexts of technological diffusion. The framework provides a template within which evidence arising from a number of academic disciplines can be assembled and assessed.<sup>3</sup>

Literature on the social and political contexts is reviewed and conditions under which the BMD test emerged and became accepted is examined. In particular, we examine the powerful commercial interests which place heavy and continuing pressure on healthcare providers and women to focus on biological, rather than social, determinants of health.

Critical health technology assessment starts from a premise that clinical care does not simply reflect scientifically proven diagnostic and treatment protocols; clinical medicine is embedded in, and shaped by, specific social, economic, and political contexts. Medicine does not merely describe a pre-existing biological reality, but reflects and perpetuates societal relations of power. Thus medicine and science, like all beliefs and practices, both reflect and support the cultural values of society at large.

## **ANALYSIS**

Two approaches of interdisciplinary research provide critical analyses of technologies related to women and aging: feminist analysis demonstrates how technologies pertaining to women's health emerge out of, and perpetuate, popular ideas about women's bodies and women's roles in society;<sup>10-12</sup> cross-cultural analysis documents variations in life-course

transitions, in particular the experience of menopause, and challenges the universality of menopausal symptoms.<sup>13-16</sup>

These critiques in social studies challenge the ease with which life processes such as menopause are being medicalized, and question women's placid acceptance of commercially motivated interventions, which have no relationship to their health needs yet are emerging as the main determinant of technology diffusion. This study shows that BMD testing has been effectively diffused because it is marketed and promoted in ways that draw on, and perpetuate, two trends in western popular culture: (a) the medical model of the aging female body; and, (b) the fear of aging and its association with disability, dependency and immobility.

### **Aging and Disease**

Since the mid-nineteenth century, female life cycle transitions in Western societies have been increasingly medicalized; that is, interpreted by physicians as a series of events that should be subject to medical management.<sup>15,17,18</sup> Biological changes associated with aging are spoken about in a language of decay and abnormality. The biochemistry of women of reproductive age is taken as the standard measure for what is normal and healthy; and aging women's bodies are understood in terms of "endocrine deficiency disorder", a hormone deficiency disease that is to be treated with estrogen supplements.<sup>17-19</sup> Although passage through the life cycle is both a social and biological process, the focus of attention in medicine has been increasingly confined to biological processes, such as 'failing ovaries'.

Popular magazine articles and books on menopause contain essentially the same message: the subject matter focuses on biological changes associated with menopause, and rarely puts menopause into a larger context or discusses the subjective experience of individuals.<sup>15</sup>

Aging is associated with a cluster of meanings involving emotional and physical losses. These losses include declining social status and degradation of self-image, as the cultural ideal, youthful femininity, can no longer be met. The social meanings associated with aging also include deeper fears of disability leading to loss of independence.<sup>20</sup> Featherstone and Hepworth<sup>21</sup> have commented on the fear held for the aging body in contemporary Euro-American societies. They refer to the 'mask of aging', the physical signs of 'decay' such as wrinkles and grey hair, from which women dissociate themselves. As they note, such a conception of aging "sets great store on the belief that aging is a potentially curable **disease.**" (emphasis in original).<sup>21</sup>

Cross-cultural research has shown that the onset of menopause may bring increased social status to women in many cultures. The feedback loop between popular and scientific knowledge has created and perpetuated the notion that the aging female body is a diseased body. BMD testing "works" in Euro-American societies because it has emerged out of, and in response to, culturally accepted norms about women's bodies and women's roles in society. The well-entrenched medicalized model of menopause has paved the way for the medicalization of bone mineral loss.

## **Marketing of Fear**

While natural phenomena become labelled as disease, anxiety is heightened as the general public is inundated with media coverage about the "discovered" disease.<sup>14,22</sup> Social studies of medicine have repeatedly demonstrated how market forces may create and capitalize on a climate of risk and reassurance, which then drives the use of health technologies regardless of whether they lead to improved health outcome. This has been shown for prenatal ultrasound,<sup>23</sup> electronic

fetal monitors,<sup>24,25</sup> predictive genetic and other screening,<sup>26,27</sup> hormone therapy,<sup>28</sup> and mammography,<sup>14,29</sup> among others.<sup>30,31</sup>

In the early 1980s, most women had never heard of osteoporosis. Beginning in 1982, sponsored by a pharmaceutical company, an education campaign was launched to create public awareness of osteoporosis as an important women's health issue. The company clearly stood to benefit from increased public awareness of osteoporosis, and women who sought advice from physicians about prevention might easily end up with a prescription for HT.<sup>32</sup> The campaign included radio, television, and magazine coverage, such as various articles in *Vogue*, *McCall's* and *Reader's Digest*. As Whatley and Worcester explain, by the mid-1980s, women had not only heard of osteoporosis, they had become frightened of the seeming inevitability of postmenopausal hip fractures and of a life of disability and dependency.<sup>20</sup>

The market forces are appreciable. In the time leading up to the WHO redefinition of osteoporosis, drug companies were poised and waiting, recognizing that a massive potential target population of “baby boomers” existed and was growing. The economic implications of testing and treating the female baby boomers from age 50 till they turn 85 is staggering.

Once the fear of becoming diseased has been created, women are made to feel personally accountable for managing their risk of disease and for future illness, and are encouraged to take appropriate measures to prevent such disease.<sup>10,14,27,30,33</sup> Given that menopause has been defined in terms of hormone deficiency (and osteoporosis is increasingly defined in relation to that deficiency) any woman who wishes to avoid the "diseases" of aging will have to be tested for BMD and, if deficient, will have to take HT.

## CONCLUSION

The implications of the 1993 redefinition of osteoporosis for the lives of women remains largely unexamined by scientific research. At the very least, testing and labelling large cohorts of pre- and peri-menopausal women as “abnormal” in BMD is leading to increased dependency on BMD testing and associated interventions. Repeat testing becomes necessary and HT would be administered over many years in order to ensure that women retain “normal” levels of bone density.

Psychological side effects of BMD testing resulting from being labelled as “at risk” will only add to the anxiety caused by popular media coverage about a “new” disease. Goffman’s work on labelling<sup>34</sup> provides an appreciation of the extent to which the identities and life experiences of women so labelled will be altered - this, in the absence of physical symptoms or disease.

The very act of transposing probabilities of epidemiology into clinical practice as a concept of risk means that this identified risk will be interpreted as something which the patient suffers. Being “at risk” has come to mean being “diseased”. On-going medical intervention has accordingly come to be seen as necessary to prevent the body from aging.

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