

目 录

一、骨质疏松症中国白皮书背景介绍	1
二、骨质疏松症白皮书（2008 中文）	3
三、骨质疏松症白皮书（2008 English version）	21
四、中国健康促进基金会（CHPF）介绍	41
五、国际骨质疏松基金会（IOF）介绍	43
六、编委会名单	44

《骨质疏松症中国白皮书》背景介绍

中国健康促进基金会国际部

中国健康促进基金会作为国际骨质疏松基金会国家团体委员（CNS）的成员，于 2008 年夏应国际骨质疏松基金会的邀请参与编写《骨质疏松症白皮书》中国部分，并签署了协议。

在中国健康促进基金会的积极筹备下，组织了以朱汉民教授为领导的骨质疏松症中国白皮书编写执行委员会负责起草白皮书，邀请了德高望重的老专家组成了顾问委员会以保证白皮书的公正性，邀请了来自各地的热心于公益事业骨质疏松领域的专家组成了通讯编委，以保证白皮书内容覆盖的地区广泛性。

在各位专家的辛勤工作下，终于在 2008 年 9 月完成白皮书的起草工作。2008 年 10 月 20 日，开始正式征求顾问委员会和通讯编委专家的意见，以及国际骨质疏松基金会的意见。经过多次修改和执行编委会的多次会议讨论，于 2009 年 5 月正式完成，经过一个月的公示后，在《中华健康管理学杂志》2009 年 6 月第三卷第 3 期正式发表（148 - 154 页）。

该白皮书英文版也正式被国际骨质疏松基金会接受，并纳入《骨质疏松症白皮书》在国际骨质疏松基金会的网站发布。2009 年 9 月 22 日将在北京的新闻发布会上正式向世界发布。《骨质疏松症中国白皮书》的出版是中国骨质疏松症防治事业的一个里程碑，第一次对

我国骨质疏松防治历史进行总结、第一次对对将近 20 年的骨质疏松症在中国的防治成果进行了展示，成为世界了解中国的一个窗口，成为政府了解我国骨质疏松症防治的一个信息来源，成为我国学者、公益和学术机构，以及企业获得一个客观信息的平台。

白皮书的编写是一个浩大的工程，耗时、耗力、耗资。在此期间中国健康促进基金会的工作人员也开展大量的资金募集工作。由于是公益行动，我们遇到了很大的资金筹措困难。尽管如此，在白书忠理事长的鼓励下，常映明秘书长的大力支持下，以朱汉民教授为领导的执行编委会不计较个人得失付出了大量的时间和精力，终于使得该白皮书能够顺利完成并出版。

在此，中国健康促进基金会向所有参与本书编写编委和顾问们表示感谢，为本书编写提供帮助和支持人工作人员和志愿者表示感谢。中国健康促进基金会对为本书提供的珍贵的资金支持的企业：利乐中国有限公司、同济堂制药有限公司、杭州鑫富制药有限公司、河北医科大学生物工程中心表示诚挚的感谢。也希望今后更多的学者和公司能参与我国的健康促进公益事业。

骨质疏松症中国白皮书

中国健康促进基金会
骨质疏松防治中国白皮书编委会

一、中国人口概况

我国在 1953, 1964, 1982, 1990 和 2000 年分别进行了 5 次全国人口普查, 又于 2001、2002、2003、2004 和 2006 年开展了人口变动抽样调查, 于 2005 年进行了 1%人口抽样调查。根据 2000 年第五次全国人口普查结果, 中国有总人口 1,242,612,226 (未计算 1.81%的漏登率), 50 岁以上的中老年人总人口为 256,988,000 人, 占全国总人口的 21%, 其中男性为 127,701,000 人, 女性为 129,287,000 人, 80 岁以上高龄老年人总人口为 11,991,083 人, 其中女性 7,444,508 人, 男性为 4,546,575 人, 女性高龄老年人作为男性的 1.64 倍⁽¹⁾。2006 年全国进行的人口变动抽样调查, 全国总人口估测为 1,314,957,001, 50 岁以上中老年人总人口为 350,016,538, 占总人口 26.62%; 男性和女性人口分别为 174,363,298 和 175,653,240, 分别占总人口 13.26%和 13.36% (表 1-2)。2000 年至 2006 年六年间全国人口年均增长率为 0.95%, 而 50 岁老年人口年均增长率高达 5.2%⁽²⁾。

预测未来的人口发展趋势, 按总和生育率 1.8(总和生育率 1.65 至 1.8 更适合中国实际)和年龄别死亡率计算, 预测中国人口 2020 和 2050 年总人口分别为 14.29 亿和 13.83 亿⁽³⁾。

表 1. 50 岁以中老年人总数和性别比（2000 年）

	总人口	占全国 总人口%	男：女（男 = 1）
全国男性	640275969	51.53	1
全国女性	602336257	48.47	0.94
全国	1,242,612,226	100.00	-
50 岁以上中老年人 男	127,701,000	10.3	1
50 岁以上中老年人 女	129,287,000	10.4	1.012
50 岁以上中老年人	256,988,000	20.7	-

资料来源：第五次全国人口普查报告 2002 年 11 月版，中国统计出版社

表 2. 50 岁以上中老年人总数和性别比
（2006 年人口变动抽样调查推算）

	总人口	占全国总人口%	男：女（男 = 1）
全国男性	666,288,712	50.67	1
全国女性	648,668,289	49.33	0.94
全国	1,314,957,001	100.00	-
50 岁以上中老年 人 男	174,363,298	13.26	1
50 岁以上中老年 人 女	175,653,240	13.36	1.01
50 岁以上中老年 人	350,016,538	26.62	-

资料来源：2007 中国统计年鉴,2007 年 9 月第一版,中国统计出版社

中国不仅是人口大国,老龄化速度也非常快速。与 2000 年相比,到 2010 年,60 岁及以上老年人预计将从 1.32 亿增加至 1.73 亿,2020 年将增加至 2.45 亿,2030 年增加至 3.55 亿,2040 年增加至 4.10 亿,2050 年将预计增加至 4.38 亿。50 岁以上人口 2010 年、2020 年和 2050 年将分别为:3.32 亿、4.69 亿和 5.71 亿⁽⁴⁻⁵⁾。

二、中国骨质疏松症的流行病学

骨质疏松症是一种悄无声息的流行病,在定量骨矿测定技术发展前,常在第一次骨折后甚至多次骨折后被诊断。骨质疏松症可分为临床前期(也称骨量丢失期和临床期(也称脆性骨折发生期)。因此骨矿测量值和脆性骨折的发病率和患病率是用来研究骨质疏松症流行病学的重要方法。

目前骨质疏松症的诊断阈值是建立在年青健康女性人群 BMD 或 BMC 的分布上。我国各地区大多采用 1994 年 WHO 公布的骨质疏松症诊断标准开展流行病学调查,即按骨密度值低于本地区同性别年青成人参考范围 2.5SD 来评估。骨骼发育成熟的成人,BMD(骨密度)或 BMC(骨矿含量)值呈正态分布,以年青健康男性和女性的 BMD 或 BMC 的均值和标准差($\bar{X} \pm SD$)为基准进行比较(或用 T 值表示),藉此建立以骨密度值为基础的诊断分类:

正 常:	T 值 > -1	(T-score > -1)
低骨量	-1 $<$ T 值 < -2.5	(-1 $<$ T-score < -2.5)
骨质疏松症	T 值 < -2.5	(T-score < -2.5)
重度骨质疏松症	T 值 < -2.5	(T-score < -2.5)
伴有一处或多处骨折		

骨质疏松症是一种年龄相关性疾病,人口老龄化程度越高,患病人数越多。我国目前是世界人口大国,亦是老年人口绝对数量最多的国家。1984-1990年间,国内已有应用X线跟骨指数和单光子骨密度测定法调查骨质疏松症的流行病学报告⁽⁶⁻⁷⁾,1995-2006年间则有多个应用DXA测量技术开展的流调报告⁽⁸⁻²⁰⁾。骨质疏松症患病率在不同地区和不同民族之间存在差异。我国幅员辽阔,民族众多,其中汉族占总人口的91.53%(2000年第五次全国人口普查报告)。即使在汉族人群由于分布地域不同、生活方式差异很大,导致骨质疏松症的患病率也有明显差异。1995年后报道了许多地区性的流行病学调查¹⁰⁻²⁰。中国人口分布特点是93.7%的总人口聚居在占国土总面积约1/2的东南地区,而6.3%的总人口聚居在国土另一半的西北地区。迄今为止,有两个全国范围内的大人群应用DXA测量技术进行的流行病学调查可较好地说明中国骨质疏松症患病情况。

1999-2000年由国家资助的调查、按WHO诊断标准在全国东北、华北、华东、中南和西南五大行政区对40岁以上汉族人群的抽样调查结果显示:以椎体和股骨颈BMD值为基础的骨质疏松症患病率分别为9.9%和11.1%(男性分别为17.0%和5.8%,女性分别为12.2%和15.5%);60岁以上人群分别为14.2%和13.2%(男性12.1%和8.1%,女性分别为32.3%和53.5%)⁽⁸⁾。但该研究没有对各研究设备进行横向校准。

2003-2006年由卫生部科教司组织的全国的另一一次大规模流行病学调查,确定了中国人群的峰值骨密度和达峰年龄。男性在20-30岁骨量达峰值,而女性则在30-40岁达峰值。40岁以上汉族人群的抽

样调查结果显示,以椎体 L1-4,股骨颈和大转子 BMD 值为基础的骨质疏松症总患病率为 15.2% (男女性分别为 5.3%和 24.4%),椎体和股骨颈总患病率分别为 19.7%和 14.1%(男女性椎体分别为 2.6%和 27.3%;股骨颈分别为 4.9%和 11.5%);50 岁以上人群以椎体 L1-4,股骨颈和大转子 BMD 值为基础的骨质疏松症总患病率为 15.7% (男女性分别为 8.8%和 30.8%),椎体和股骨颈总患病率分别为 20.7%和 14.4%(男女性分别为椎体 2.6%和 27.3%,股骨颈分别为 4.9%和 11.5%);全人口 20 岁以 L1-4 或股骨颈部位 BMD 小于等于 -2.5SD 人群百分比男性为 4.2%,女性为 12.8%⁽⁷⁾。存在低骨量的人群 (BMDL1_4 或股骨颈部位小于等于 -1.0SD 大于 -2.5SD)50 岁以上男性为 57.6%,女性为 64.6%;20 岁以上男性为 43.4%,女性为 40.9%⁽⁷⁾。

按调查估算全国 2006 年在 50 岁以上人群中,约有 6,944 万人 (男 1,534 万,女 5,410 万)患有骨质疏松症,约 21390 万人存在低骨量 (男 10,043 万,女 11,347 万)⁽⁹⁾。随着人口不断老龄化,50 岁以上人群低骨量和骨质疏松症的患病率还会增加。40 岁以上人群和 60 岁以上人群的比较说明:60 岁以上老年人中的骨质疏松症的发病率明显增高,以女性尤为突出。

三、中国骨质疏松性骨折的流行病学

骨质疏松性骨折是属于脆性增加导致的骨折,也称脆性骨折。所谓脆性骨折 (Fragility fracture)是指是在无外伤或较微外伤情况下引起的骨折。所谓轻微外伤一般是指在人体站立高度下活动过程中发生的骨折。骨质疏松症最常见的骨折部位为椎体、髌部和腕部。我国东部上海地区 (纬度 31.40-31.53°)报道,60 岁以上的老人骨折总患病率城区为 20.10% (男 15.58,女 23.45%),农村地区为 8.83%(男

2.04%，女 9.81%）；在城区，老年前期不论男性和女性以前臂远端骨折为主，至老年期男性髌部骨折略多见，女性以前臂远端、椎体和髌部为主；在农村男性老年人在老年前期和老年期骨折无专一好发部位，女性与城区情况类似⁽²¹⁾。

1. 髌部骨质疏松性骨折的流行病学

2002-2006 年中国北部城市北京（纬度 39.26 至 41.03°）的调查显示，50 岁以上髌部骨折发病率男性 138/10 万，女性 254/10 万⁽²²⁾。来自东部上海地区（纬度 31.40-31.53°）调查还发现，‘60 岁以上老年人中髌部骨折患病率男女性分别为 93.28、230.84/10 万/1990，217.66、277.01/10 万/1997⁽²¹⁾，城市男女老年人骨质疏松性骨折在 8 年间患病率增长为 3.34%和 3.85%，农村老年男性患病率增长 3.36%和 1.00%；据此推算，预计到 2020 年髌部骨折发病率男性和女性分别将达到 233/10 万和 465/10 万；2050 年将分别达到 626/10 万和 1444/10 万。按 2006 年 50 岁以上人口男为 174,363,298，女为 175,653,240 计算⁽²⁾，则髌部骨折患者数为 68.7 万（男女分别为 24.1 万和 44.6 万）。预计 2020 年 50 岁以上髌部骨折总的发病率为 349/10 万，2050 年为 1035/10 万。按前述推断的 50 岁以上人口数，2020 年和 2050 年分别为：4.69 亿和 5.71 亿，则 2020 年和 2050 年髌部骨折人数为 163.8 万和 590.8 万。即使骨质疏松髌部骨折发病率基本不变，2020 年和 2050 年出现的髌部骨折患者也将达到 91.9 万和 111.9 万。

髌部骨折的治疗，在城市基本全部接受外科治疗，即使接受外科治疗，其治疗方式差别也很大。而在农村，绝大部分髌部骨折患者由于经济原因选择在家休养，不接受外科治疗。由于中国地域辽

阔、地区文化和经济差异悬殊，因此目前尚无一个可靠数据来反映在中国是如何治疗髌部骨折的。有待进一步调查。

2. 骨质疏松性椎体压缩性骨折的流行病学

长期以来椎体压缩性骨折的流行病学资料较难获得。因为大多椎体骨折患者无症状，其次进行放射摄片法普查需要巨大的人力和物力。我国北京、成都和上海三地，应用胸腰椎侧位放射性摄片形态计量法和半定量方法对 50 岁以上的妇女研究结果显示，总患病率 15%，呈增龄性增高，80 岁以上为 36-39%，仅 20%的骨折患者去医院诊疗（表 3）⁽²³⁻²⁵⁾。根据中老年人口年增长数计算，椎体骨折的每年新发病率约有 1,808,619 人。预计至 2020 年椎体骨折患病人数将高达 36,75 万人，2050 年达 4850 万，（根据 2050 年老年人口数和 15%的女性患病率估算）。男性的椎体骨折发病率低于女性，50-54 岁和 75-79 岁人群，男性分别为 0.9 和 13.6/1000 人.年，女性分别为 3.6 和 29.3/1000 人.年。

表 3. 50 岁以上女性椎体骨折患病率

年龄	北京*	成都	上海
50-59	4.4	8.7	-
60-69	16.2	15.8	-
70-79	19.0	25.91	25.42
80	36.6	36.00	39.28

四、骨质疏松性骨折带来的社会经济负担⁽²⁶⁻³⁰⁾：

骨折是骨质疏松症的严重后果，生活质量明显降低，给社会带来沉重的经济负担。骨折的处理可分为非手术治疗和手术治疗。椎体骨折是最常见的骨质疏松性骨折类型。在中国绝大多数老人采取

了非手术治疗，如卧床、制动、止痛等治疗，相当多的患者不去就医。而在中国刚开始的微创手术 - 椎体成形术也仅限于一些大城市，由于价格昂贵而远远没有普及。对于骨质疏松性椎体骨折的治疗费用尚未看到任何文献报道。

髌部骨折是骨质疏松症导致得最严重的并发症。在大城市的患者基本都接受了手术治疗，但由于髌部骨折因患者的年龄、伴有并发症情况、住院时间、手术方式不同而产生的治疗费用有很大差别；在农村的患者，接受手术治疗的比率远低于城市。由于中国地域经济水平差异较大，政府对各级医院实施单病种成本化管理尚未普遍开展，因此目前尚无一个可靠数据来反映整个中国治疗髌部骨折的费用。据 2006-2007 年卫生部科教司资助开展的全国 10 大省会城市 10 大医院的调查显示，髌部骨折治疗费用：2007 年股骨颈骨折男性治疗费用为 2.63 万，女性为 2.27 万；转子间骨折治疗男性为 1.61 万，女性为 1.75 万。根据重庆等地近几年的数据，治疗费用的年增长率在 6% 左右。预期到 2020 年，医药费用增加到 2007 年的 2.1 倍，预计股骨颈骨折治疗费用男性和女性分别达 5.6 万和 4.8 万；转子间骨折分别达 3.4 万和 3.7 万。至 2050 年，费用可能为 2020 年的 5 倍以上。

根据国家卫生部门资料，髌部骨折的住院病人治疗天数平均 22-24 天，按发病后住院计算，乳腺癌住院治疗的平均时间为：13 天，卵巢癌 11 天，前列腺癌 19 天，心脏病搭桥 10 天。按住院费用比较，髌部骨折后第一次平均住院费用为 2.12 万元，乳腺癌为 1.1~2 万元左右；卵巢癌 1.5 万元；前列腺癌 2 万元；心脏病住院治疗费用 2 万元。可见骨质疏松症也是一个消耗国家大量医疗资源和经济资源

的慢性病，按发病率逐年增加计算，在 2006 年用于髋部骨折治疗的费用将在 63.5 亿元之上(最高可达 103.8 亿元)，至 2020 年预计会增至 850 亿元以上，到 2050 年则将达 18000 亿元。因此积极开展骨质疏松症的防治有重大的社会意义和经济意义。

五、骨质疏松症的诊断

完整的骨质疏松症诊断要包括临床诊断（脆性骨折史）、骨量诊断、骨转换状态诊断和病因诊断。骨矿测定技术的应用是骨量诊断的重要内容，在众多的骨矿测定技术中，双能 X 线(DXA)骨密度仪是目前临床评估骨量和诊断骨质疏松症的主要工具和金标准。

1984 年起，单光子(SPA)骨密度测定法在中国应用于临床研究，1992 年后 DXA 骨密度测量技术进入中国并在全中国逐步开展。据不完全统计，目前全国拥有台式 DXA 约 450 台，超声和其他外周骨密度测量设备约 1100 台，主要集中在大城市，如北京，上海，重庆等。以北京和上海两个城市为例，2007 年北京常住人口为 1633 万，拥有 DXA55 台，0.034 台/万人。2007 年上海常住总户籍人口数为 1368 万人，目前拥有双能 X 线骨密度仪 21 台，相当于 0.015 台/万人。全国县级城市中配备双能 X 线骨密度仪的极少。定量超声骨密度检测仪在中小城市应用较为普遍，在公立医院系统和各种类型的体检中心一般都配有此类检测仪器，以上海为例，共有 43 台，广州约有 12 台。这两类骨矿检测费用 95%以上均属国家医疗保险支付。骨密度检测大多数都能在 1 ~ 2 天内完成。

据某厂家调查，全国 5420 个医院中，拥骨密度仪 769 台（含各类骨密度仪）。总体而言，各种骨矿专用仪器应用于临床在全国的医院的覆盖率仅 14.2%。

X 光设备在中国各级医疗机构很普及，是 1990 年前诊断骨质疏松的主要工具，但在目前临床实际工作中很少使用。

中国是老年人口大国，拥有的骨质疏松症患者数量也是世界上第一的。诊断设备严重不足。与日本相比，2007 年日本人口有 1.28 亿，拥有 DXA12000 多台，人均 9.4 台/10 万人。韩国人口 4800 万，拥有 DXA3000 台，人均 6.3 台/10 万人。中国是发展中国家，不能简单地和发达国家相比。因此我们 13 亿中国人平均按照中国每 10 万人拥有一台超声骨密度仪计算，中国还需 13000 台超声设备；在未来如果能达到韩国现有水平，根据北京和上海的情况计算，北京至少还需要 980 台，上海需要 875 台。只有改善骨质疏松症的诊断条件，提高诊断率，才能很好地预防骨质疏松性骨折的发生。

六、骨质疏松症的预防

西方医学对骨质疏松症的认识从命名开始至今已有近 180 年的历史。在中国传统医学中，虽无此学名，但数千年来已有类似的临床描写和治疗经验方剂，如“骨青春”建立在传统药物上的针对骨骼和关节的保健品。在上世纪三十年代，我国学者曾对代谢性骨病作出过重大贡献，就骨质疏松症而言，近十余年来，中国各类医学学术团体、健康保健组织、社团经常举办国际性、全国性和地方性的学术交流以及科普宣传，一些制药、食品和保健生产企业也积极参加这类科普活动。在北京和上海等城市，以社区为单元的骨健康群众性保健、防治和康复也有较大发展。2007 年中国健康促进基金会发表了“办公室白领骨健康情况调查报告”通过不乐观的现实状况向社会发出建立健康的生活方式来预防骨质疏松症。目前尚未形

成和建立一个全国性、行政性或制度性的预防骨质疏松症的群体性项目。

七、骨质疏松症的治疗

1994-1998 年间，国家医药卫生机构先后批准一些传统中成药（仙灵骨葆胶囊）和活性维生素 D 作为以骨质疏松症为适应证的药物；1998 年，阿仑膦酸盐作为近代抗骨质疏松症的新药获得国家医药局的批准正式应用于临床，此后各类抗骨质疏松症的新药物陆续进入临床。由于中国地区间的经济差异悬殊，导致城市与乡村之间、东南和西北地区之间用药差异较大，如北京、上海、广州等东南沿海城市，雌激素替代治疗（HRT）、雌激素受体调节剂、各类双膦酸盐、降钙素都已应用 5~10 年以上的历史；雷尼酸锶也已完成了临床试验，获得了批准即将应用于临床。2009 年 1 月第一个静脉用药治疗骨质疏松症的双膦酸盐（艾本）在中国上市。每 3 个月一次的治疗标志着骨质疏松症的治疗进入新的时代。除中成药外，骨质疏松症治疗药物均为处方药；钙和维生素 D，以及一些中成药属非处方药，患者可在药店自行购买。目前中国尚无方便服用的单纯维生素 D 制剂。

对于骨质疏松症的治疗药物的报销，中医药有着悠久的历史治疗骨伤病的传统，多种单方和复方的抗骨质疏松药物已归入国家医疗保险范围。对于西药，国家卫生部要求各级医院根据通用名开具处方，不使用商品名。严重骨质疏松症（伴有骨折的患者）的治疗属于国家医疗保险支付范畴。2008 年以补肾强骨列入国家医疗保险目录中的中药有仙灵骨葆胶囊（片）和骨疏康胶囊（颗粒）；以钙代谢调

节药物被列入国家医疗保险目录中的西药有羟乙膦酸钠、阿仑膦酸钠、骨化三醇、阿法骨化醇和降钙素等。

八、政府对于骨质疏松症的态度

骨质疏松症在中国正在逐渐被患者、医务人员所认识，被政府所关注。自 1990 年起，政府先后批准了全国性骨质疏松症的专业学术团体，如 1990 年民政部批准了中国老年学会骨质疏松委员会，1997 科技部批准了中华医学会成立骨质疏松和骨矿盐疾病学会，许多隶属于中华医学会的专科学会如骨科学会、老年医学学会、内分泌学会、妇产科学会等都纷纷组建骨质疏松学组，至今，已经发展到中国 32 个省市均有骨质疏松相关的学会，2007 年 11 月份国家卫生部、民政部又批准成立了中国健康促进基金会骨质疏松专项基金管理委员会。

1992 年中国政府支持举办第一次国际性骨质疏松大会以来，几乎每年都有各种不同形式的国际、全国和地区学术大型交流活动。2001 年 3 月：国家科技部奖励工作办公室批准设立了第一个全国性奖项，中国药学会发展奖康辰骨质疏松医药研究奖，以奖励在骨质疏松症防治方面做出突出贡献的专家学者；2001 年 9 月科技部下属的中国科学技术发展基金会批准设立了第一个骨质疏松症防治专项基金，以资助和促进骨质疏松症防治在全国范围内开展；2001 年 10 月国家科技部批准设立每年一届的国际骨质疏松大会，以促进中国学者和国际学者间的交流。2004 年科技部下属机构管辖的骨质疏松基金委员会正式加入国际骨质疏松基金会(IOF)国家团体委员会。

1994 年起，政府将骨质疏松症的防治先后列入国家“九.五”、“十.五”和持续至今的十一五国家支撑课题，各地方政府也有很大

的投入；2002 年卫生部开展第一个前瞻性地在中国 13 个城市，按照国际通用流行病学方案和质量控制方案开展了中国正常人骨峰值和骨质疏松症患病率调查。2003 年 10 月经国家卫生部批准引进了国际骨密度测量培训班(ISCN)，以提高我国对骨质疏松症的诊断能力。2007 年中国健康促进基金会也成为国际骨质疏松基金会的成员；2008 年 3 月：中国健康促进基金会与国际骨质疏松基金会签署了合作备忘录，把骨质疏松防治国际性合作行动提高到更新水平

2005 年 10 月 20 日，浙江杭州鑫富药业股份公司的捐助在杭州启动了浙江省“手拉手骨健康工程”大型公益活动，300 多老年人进行了环西湖健康行走活动，普及了骨健康知识。2006 年 10 月在卫生部的支持下，面向百姓的“银丝带”中国骨质疏松防治公益活动启动；2007 年中国健康促进基金会获得贵州同济堂制药有限公司的百万元捐赠后，继续推动“银丝带”公益活动的开展，在全国范围内进行了“骨质疏松症科普大讲堂和万人普查”等活动。

2005 年政府将骨质疏松症治疗药物首次列入医保药物目录，标志着政府对骨质疏松症治疗的认可；2006 年 12 月，美国医学研究机构（信纳克医学研究中心）首次对中国传统药物（以淫羊藿为主要的仙灵骨葆）进行了循证研究，标志着骨质疏松防治的国际舞台上有了中国元素。

学术期刊的数量代表该领域的学术活动的活跃性。迄今为止，全国性的骨质疏松症学术期刊有两个：1995 年国家新闻总署批准了第一个骨质疏松杂志创刊《中国骨质疏松杂志》；2008 年《中华骨质疏松和骨矿盐疾病杂志》获得批准公开发行。

中国现有全国性学术团体编写的骨质疏松症相关指南三个：1999 年中国老年学学会骨质疏松委员会发表了《骨质疏松症的诊断标准试行办法》；2007 年中华医学会骨质疏松与骨矿盐分会制定的《原发性骨质疏松症防治指南》；2008 年中华医学会骨科分会发表了《骨质疏松性骨折诊疗指南》。

2003 年国家卫生部发布的居民慢性疾病患病率调查结果为：高血压：26.2‰；胃肠炎：10.3‰；风湿性关节炎：8.6‰；COPD：7.5‰；脑血管疾病：6.6‰；胆结石胆囊炎：5.7‰；糖尿病：5.6‰；肿瘤：1.65‰，骨质疏松症尚未列入全国慢性病的排名中。作为补充，卫生部的 2002-2005 年的关于骨质疏松症患病率的调查结果显示为 8.8%，名列第三。

九、患者关注程度

人口平均期望寿命明显增长，生活质量已成为公众关注的问题。在一项对 56630 例（男 12332 例，女 44298 例）、年龄范围 20-90 岁、均能自由走动的东南沿海城市居民对骨骼健康保健意识的调查结果显示，城市居民普遍关注骨骼健康，半数居民已知道骨质疏松症疾病名称，并有半数居民知晓晒太阳、运动对骨健康有利，接近 60%的居民知晓喝牛奶对骨健康有好处，且有半数居民认识钙剂对骨健康有益，并有三分之一以上的人在服用钙剂，女性高达 40%多。因此加强钙剂的应用知识普及包括、选择、安全性等仍然很重要。对于保健知识的获得，半数以上希望从电视上获得，但希望药厂获得资料的要求率低，通过网络渠道获取信息的要求率更低，这对保健知识转播的方式有参考价值。目前尚缺少有关农村患者的骨骼健

康保健意识的资料⁽³¹⁾。一些非政府的民间机构也在积极组织促进民众对骨质疏松症关注的全国性社会项目。

十、医务工作者对骨质疏松症防治的关注程度

在目前中国临床诊疗实践中，骨质疏松症正在被医生所认识，但是骨质疏松症的不诊断率仍然不容忽视。来自上海 13 个区所有 1、2、3 级医院统计资料研究显示：髌部骨折男性 1017 例，女性 1833 例的患者中，仅 3% 的患者接受了骨密度检查，仅有 15.8% 的女性及 10.7% 的男性患者接受抗骨质疏松药物治疗(把单纯补钙也列入作治疗统计)；在一份对来自多个省市的骨科医师的问卷调查发现：70.1% 的医师认为骨质疏松症的诊断要作骨密度检查，53.5% 的医师认为骨质疏松骨折与大量饮酒、吸烟和绝经后妇女等因素有关⁽³²⁾。

总的来说，大城市中越来越多的医院，开始配备骨密度检测仪，开设专门的骨质疏松症门诊。在医生培训和设备配备上，其重视程度大致依次是：内分泌、老年科、骨科、放射科、风湿科、妇产科、全科。急诊和儿科几乎无任何与骨质疏松症相关的培训和检测。护理学、营养学、理疗学科等辅助科室，也几乎无有骨质疏松症相关的培训和设备配备，直接参与骨质疏松症防治的科室不多。目前参加过专业培训并获得国际骨密度测量技术资格的技术员（CDT）和能正确解读骨密度检测报告的医生（CDD）不到 100 名。以此看来，我国骨质疏松症的诊断的规范化的任务，任重而道远。

十一、建议

中国是一个幅员辽阔、多民族、多文化的人口大国，也是骨质疏松症患者数量和潜在数量最多的国家，又是发展中的国家，防治和研究工作有待进一步提高，精确评估骨质疏松症在中国的实情仍

需要更多、更精确的数据。通过对现有资料的调查和分析，提出以下建议：1.通过政府和非政府途径，继续加强对骨质疏松症防治的基础和临床研究的投入；2.加强骨质疏松症的专业教学，尽快把骨质疏松症列入医学生教材，同时也列为在职医护人员继续教育培训内容；从而提高医务人员对骨质疏松症的认识和重视；3.提高医院对骨质疏松症的诊疗能力，对于发生骨折和腰背疼痛的患者及时进行诊断和治疗；条件许可，设置骨质疏松症专科门诊，并按不同医院级别或经济水平配置相应骨密度仪（超声或 DXA）；4.按照安全、有效、经济、伦理和人文等原则定期评估骨质疏松症现有的诊疗标准和方法，并在基本医疗目录中及时列入或删除；5.加强科普教育，提高高危人群对骨质疏松症的认识，重点是通过建立现实可行的多喝牛奶、多晒太阳、多运动的健康生活方式、提高青少年的峰值骨量、保持青壮年骨骼健康、中老年人每年检测骨密度和改善其居住环境的途径来保护和提高国民的骨骼健康水平。

参考资料

- 1 中国统计局：第五次全国人口普查报告 2002 年 11 月版，中国统计出版社
- 2 中国统计局：2007 中国统计年鉴，2007 年 9 月第一版，中国统计出版社
- 3 国务院第五次全国人口普查办公室.世纪之交的中国人口（全国卷）.中国统计出版社，2006. 5.
- 4 中国人口信息研究中心：<http://www.cpirc.org.cn/est2.htm> 2002-09-19
- 5 游允中 郑晓瑛：中国人口的死亡和健康 北京大学出版社，2005，3.
- 6 谢可永：上海市区老年人骨质疏松症的发病率 老年学杂志 1983，6:28-29

- 7 朱汉民 王赞舜 陈淑英等：老年骨质疏松的发生率及有关因素调查（附2041例报告）中华医学杂志，1990，70（5）：248-251
- 8 李华宁，区品中、朱汉民等.中国部分地区中老年人原发性骨质疏松症患病率研究.中华骨科杂志，2001，21（5）：275~278.
- 9 朱汉民，方积乾，罗先正，余卫，赵燕玲: Bone mass epidemiology: bone mass change and mean peak bone mass for mainland China. International osteoporosis conference China bone and joint decade, Oct19~21 st, 2007, P. 4~18, Beijing, China.
- 10 Xian-Ping Wu, Er-Yuan Liao, Hong Zhang et al. Establishment of BMD reference plots and determination of peak BMD at multiple skeletal regions in mainland Chinese women and the diagnosis of osteoporosis[J]. Osteoporosis Int, 2004, 15(1): 71 - 79
- 11 廖二元，伍贤平，邓小戈等. 对中国长沙地区女性骨密度情况的调查[J]. 中华内分泌代谢杂志，2000，16（4）：203 - 207
- 12 王文志，马锦富，杨定焯等. 成都地区中老年人群骨密度调[J]. 中国骨质疏松杂志，2000，6（1）：40 - 43
- 13 吴青，陶国枢，刘晓玲等. 北京市区 1333 人双能 X 线骨密度测定及骨质疏松症患病调查[J]. 中国骨质疏松杂志，1995，1(1):76 - 80
- 14 赵昕，金爱明，张秀敏. 吉林省部分地区人群原发性骨质疏松症患病率的研究[J]. 中国现代医学杂志，2008，18（8）：1084 - 1089
- 15 高建华，索鹏，郑建辉等. 江门市 1385 例骨密度检测报告[J]. 暨南大学学报（医学版）.2003,24（6）：75 - 78
- 16 蒙元劲，韦金一，龙柳艳等. 柳州市中老年人骨质疏松患病率调查[J]. 齐齐哈尔医学院学报.2006，27（15）：1851
- 17 区品中，邓力平，刘毅生等. 广州地区中老年人群骨量减少及骨质疏松患病率的调查[J]. 中国骨质疏松杂志.2002，8（4）：314 - 317
- 18 陈超，刑学农，叶山东等. 合肥地区 1162 例正常人群骨密度的分析研究[J]. 中国骨质疏松杂志.2008，14（6）：419 - 421
19. 周久贤，刘浩，蒋森等. 沈阳地区 2288 例骨密度测定及骨质疏松症发病率分析[J]. 中国临床医学影像杂志.2008，19（2）：121 - 124
- 20 沈霖，杨艳萍，安锐等. 武汉地区 1359 例骨密度测定及骨质疏松患病率分析[J]. 中国骨质疏松杂志.2001，7（3）：232 - 234

- 21 朱汉民,张韵,朱晓颖等:老年人骨质疏松性骨折及8年间患病率变化.老年医学与保健,2003,9(6):89~92.
- 22 阎丽娅 周波:中国沈阳髌部骨折的流行病学研究,中国骨质疏松杂志,1996,2(2):691.
- 23 徐苓,Curmmings,秦明伟,等2北京老年妇女脊椎骨折的流行病学研究 中国骨质疏松杂志,1995,1(1):82-83
- 24 安珍 杨定焯 张祖君 蒋建军 沈苕 徐家林:骨质疏松性脊椎压缩性骨折流行病学调查分析中国骨质疏松杂志,2002,8(1):82-83
- 25 朱汉民,张韵,葛琥俊等:高龄老年妇女脊椎骨折的患病率与乳品消耗的调查上海市第三届骨质疏松学术会议论文集,2004,7,23-24 p.146
- 26 王佩芳,王培嘉,唐燕红,蔡定芳,骨质疏松性骨折的治疗费用2000-2004年统计.中国骨质疏松杂志,2006年03期;
- 27 黄燕兴,朱弼堃,张红,髌部骨折住院治疗费用统计和分析(1998-2003年)中国骨质疏松杂志 2005年02期;
- 28 符诗聪 胡建霖 罗仕华 许勇.骨质疏松骨折的住院治疗费用(1996-2001年)统计中国骨质疏松杂志 2003,9(2):137-140
- 29 罗林枝,徐苓,骨质疏松性髌部骨折的直接经济负担及其影响因素分析.中华流行病学杂志 2005年09期
- 30 沈麒麟,谢琪,夏慧芬:原发性骨质疏松骨折的治疗费用 2003年统计,中国骨质疏松杂志 2006年02期;
- 31 朱汉民,张韵,杨俭英 沈琦:城区居民骨健康钙保健意识调查第二届中国南方骨质疏松论坛 2006,4.21-4.23 上海 p.2
- 32 贺良等:骨科医生重视骨质疏松骨折的治疗和预防吗? International osteoporosis conference China bone and joint decade, Oct.19~21 st,2007,P.47, Beijing, China



Draft

White Paper China 2008

Osteoporosis

**A Summary Statement by the
China Health Promotion Foundation**

2008

The China Health Promotion Foundation would like to thank the following individuals for their work in the writing and review of the Summary Statement of Osteoporosis White Paper China 2008.

Executive Editorial:

Bai Shu Zhong	QI Guo Ming	CHANG Ying Ming
ZHU Han Min	ZHAO Yan Ling	HU Zhen Ming
XUE Qing Yun	DU Jian	CHENG Xiao Guang

Consultant committee:

FANG Ji Qian	LAO Han Chang	LUO Xian Zheng
WANG Hong Fu	YANG Ding Zhuo	

Reviewer Committee:

Chao Ai Jun	GU Gui Shan	HAO Yong Qiang
JI Xue Lei	LEE Xiao Lin	LEE Xue Song
LU Ya Fang	PEI Fu Xing	SHI Hui Peng
YU Wei	ZHANG Shou	ZHAO Yong Fang

Website: www.chinahpf.org.cn

Secretary in General: Dr. ZHAO YAN LING

Email: zhaoyanling@gmail.com

White Paper 2008 : Osteoporosis
A Summary Statement by China Health Promotion Foundation

Osteoporosis is a widespread disease where bones become thin and brittle, leading to disabling bone fracture. It currently affects more than 6.9 million Chinese over age 50 and causes some 687,000 hip fractures in China each year. Morbidity and mortality from osteoporosis fractures patients who have already fractured.

Scientists worldwide cite osteoporosis as a costly global epidemic which, left unchecked, will reach crisis proportions as the population ages. In many countries, it currently consumes more bed days than stroke, heart attack or diabetes. The majority of all osteoporotic fractures more than 50 percent - could be prevented with appropriate nutrition, lifestyle and/or pharmacological management.

China Health Promotion Foundation is the member IOF CNS since 2008. With the support of IOF China Health Promotion Foundation Launched its first White Paper of Osteoporosis in 2008 and supports immediate priorities for Government action on osteoporosis.

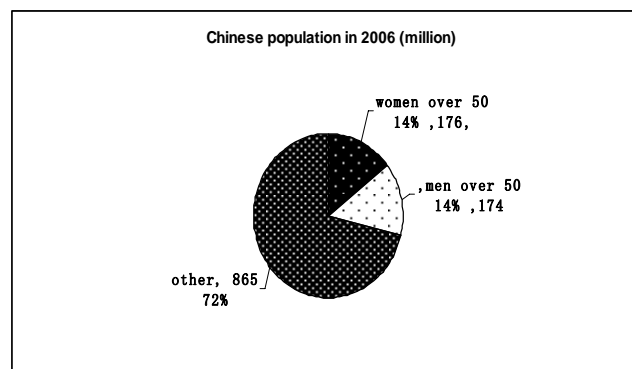
1. Epidemiology

Osteoporosis is a global health problem. It is a disease which the density and quality of bone are reduced leading to weakness of the skeleton and increased risk of fracture, particularly of the spine, hip and wrist. The loss of bone occurs progressively over many years and without apparent symptoms.

Osteoporosis is often affecting the elderly people. With more elderly people, a country usually has more osteoporosis patients. China has the largest population in the world, therefore it has the largest elderly population and also the largest osteoporosis-affected population.

1.a China has a total population of 1.24 billion in 2000 and increased to 1.31 billion in 2006. In 2000, age over 50 is 257 million, 21% of total population. Age over 80 is 12 million (Women is 1.64 times of men)⁽¹⁾. In 2006, people above age of 50 account for 350 million, about 26.62% of the total population of China; 176 million and 174 million of Women and men accordingly, it account 13.36% and 13.26% of the total population. From 2000-2006, the national population increased at a rate of 0.95% annually, while the number of people aged over 50 jumped at a pace of 5.2% each year⁽²⁾.

Figure 1. Chinese population in 2006

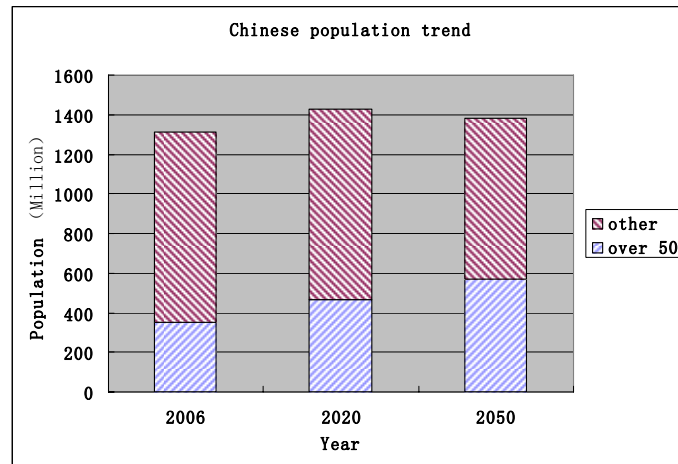


1.b According to the sum of live birth annual rate(1.65~1.8) and age matched death rate, China will have a population of 1.43 billion and 1.38 billion respectively in 2020 and 2050⁽³⁾. The number will reach to it's peak at 1.47 billion in 2030. The decreased population is due to the "One Child Policy", which was set up on December 4th of 1982. The aging speed is increasing fast. Comparing with the population over age 60 of 2000, it is increased to 173 million of 2010 from 132 million. It is expected that people over age 60 will be 245 million in 2020, 355 million in 2030, 410 million in 2040, 438 million in 2050. People over 50 will be 332 million, 469 million and 571 million in 2010, 2020 and 2050 respectively⁽⁴⁻⁵⁾.

Figure 2-A. Population in China from 1950-2050



Figure 2-B Population in China from 2006 to 2050



Epidemiology of Fracture

1.d Osteoporosis is a widespread disease where bones become thin and brittle, leading to disabling bone fracture. During 1984-1990, there are several Epidemiology studies was done by SPA measurement and published in China⁽⁶⁻⁷⁾. During 1995-2006, more Epidemiology studies was done by DXA measurement and published at domestic Medical Journal and International Journal⁽⁸⁻²⁰⁾.

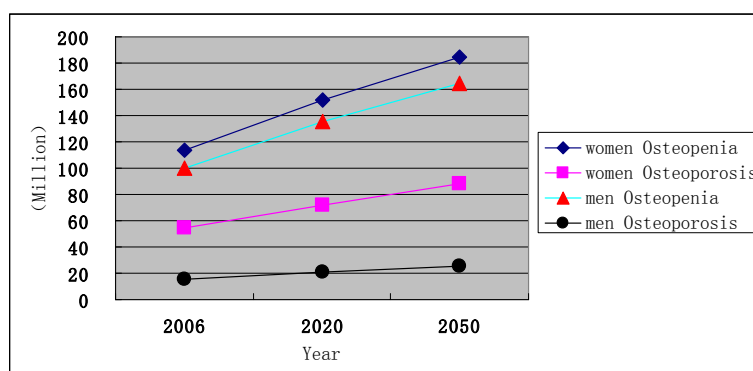
Based on WHO Diagnosis classification: Normal: BMD T-score > -1 ; Osteopenia or Low Bone Mass: BMD $-2.5 < \text{T-score} \leq -1$; Osteoporosis: BMD T-score ≤ -2.5 , in 1999-2000, the prevalence of Osteoporosis in

the people age over 40 is 9.9% and 11.1% (men 12.1%, 8.1%, women 12.2%, 15.5%) with Spine, femoral Neck accordingly)⁽⁸⁾. In the people age over 60 is 14.2% and 13.2%(men 12.1% and 8.1%, women 32.3% and 53.5%). It affected 42.4million people. In the 2003-2006 survey of China Ministry of Health, the prevalence of Osteoporosis in the people age over 50 with lumbar or hip BMD T-score lower than -2.5 is 15.7% (Men 8.8%, Women 30.8%). 69.4 million Chinese above the age of 50 have osteoporosis (15.3 and 54.1 million in men and women accordingly). There were 213.9 million people age over 50 affected Low Bone Mass(100.4 in men and 113.5million in women).

In the people over age 40, the prevalence of Osteoporosis site specific with spine and femoral neck is 19.7 % and 14.1% (men 2.6% and 4.9%; women 27.3% and 11.5%). In the survey, we found the peak bone mass was reached at age of 20-30 in men, but 30-40 in women⁽⁹⁾.

Above all, we expect the figure of osteoporosis and low bone mass population will increase to 92.9million and 286.6 million in 2020, 113.1 million and 533.3 million in 2050.

Figure 3. Osteoporosis and low bone mass in China



Fragility Fracture is the Osteoporotic fracture due to the brittle bone. It always happened at home or with little trauma, or when fall. It is common at spine, hip and wrist. In 1997, in the largest city Shanghai

(Latitude 31.40 to 31.53⁰), east coast of China, 20.1% of the people over age 60 suffered fractures ⁽²¹⁾.

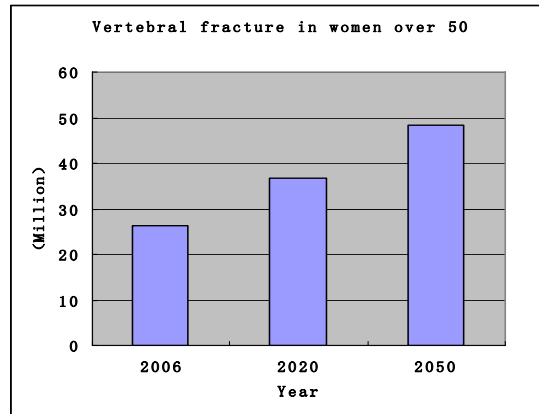
1.c Hip Fracture

In 2002-2006, the incidence of Hip Fracture is 138/100,000 and 254/100,000 in men and women in Beijing (Latitude 39.26⁰ to 41.03⁰)⁽²²⁾. 687,000 hip fracture is calculated in the population over age 50 in China in 2006(241,000 in men, 446,000 in women). A Survey in Shanghai showed the incidence of osteoporotic fracture in1990-1997 increased by 3.34 to 3.85%⁽²¹⁾. So we expect the incidence of hip fracture in 2020 and 2050 will be 349 per 100,000 and 1035 per 100,000. It is expected that the hip fracture over age 50 will increase to 1,638,000 in 2020 and 5,908,000 in 2050. The number will still be very high at 919,000 in 2020, 1,119,000 in 2050 even if we keep the incidence stable at the level of 1997.

1.e In China the economic and developing statue of different region is very different from each other. In cities, hip fractures were mainly treated with surgeries, but the method of the surgeries was very different from each city and region. While in rural areas where inhabited more than 60 percent of the total population, hip fractures were treated at home instead of surgeries. So far we can not find any report or authority statistics on what percent of hip fracture were surgically treated, it still needs to be investigated.

1.f In 1995's survey, the prevalence of vertebral fracture in the population age over 50 is 15%, it is increased with the age. The prevalence in the people at the age over 80 is 36-39%⁽²³⁻²⁵⁾. According to the survey, there were 1.8 million new vertebral fractures occurred in 2006. The number of vertebral fracture patients is expected to reach 36.7 million and 48.5 million in 2020 and 2050. The incidence of women is higher than that of men.

Figure 4, Prevalence of Vertebral Fracture in China



1.g In China, very few vertebral fractures were diagnosed. 20% of vertebral fracture people over age 50 were diagnosed ⁽²³⁻²⁵⁾. Once is diagnosed, most of the patients receive pain relieve treatment only. The Kyphoplasty was just started in China in recent years in a few big cities only. So far, there's no general report on treatment of vertebral fracture patients.

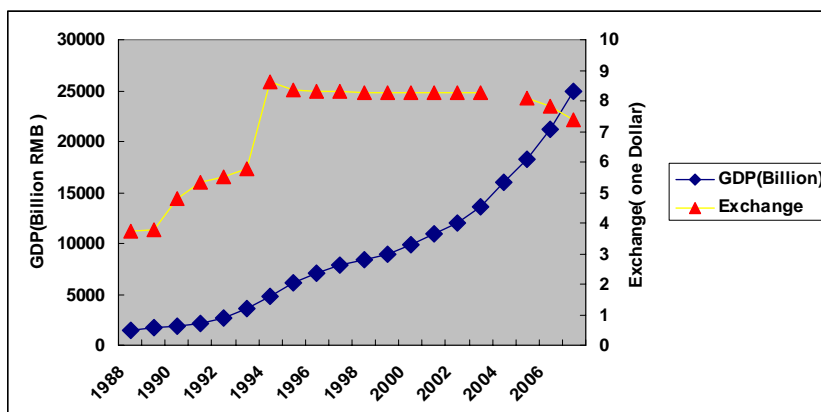
2. Cost (hip fractures)

Exchange rate of USD to RMB is 1:6.8

The average of costs of hip Fracture in 2007 were 24,500 Yuan (3,603 dollars) ^(22, 26-29). According to the statistics of Health Bureau of Chongqing and other cities in recent years, the cost for hip fracture increased at a rate of about 6% every year. It can be calculated that in 2020, the average of costs of hip fracture will be 52,000 Yuan (7600 dollars). The treatment cost of hip fracture will be 300,000 Yuan(44,000 dollars) in 2050.

In 2006, China spent about 10.38 billion Yuen treat hip fracture. In 2020, it will cost over 85 billion. In 2050, it will be more than 1,800 billion Yuen.

Figure 5.Exchange Rate between RMB and U.S. dollars, and Chinese GDP growth rate



3. Comparison of the cost of hip fracture with other disease

USD to RMB: 1:6.8

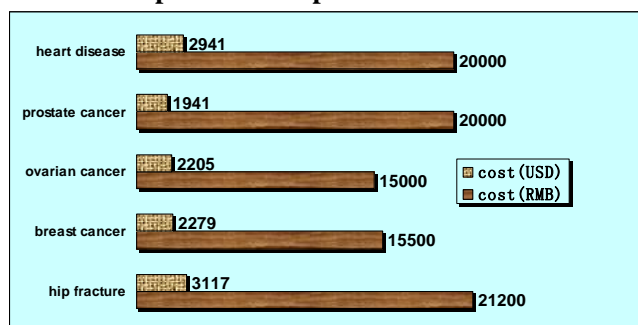
3.a-b

According to state health department, the average hospital stay for hip fractures is 19-24 nights(30)(贺良 2007). While for breast cancer is 13 nights; ovarian cancer 11 nights; prostate cancer 19 nights; heart disease 10 nights.

3.c-d

Average hospital fee for first hospitalization of hip fracture is from 16,100 to 26,300 Yuan(2367—3867 dollars); that for breast cancer 11,000—20,000 Yuan (1,617—2,941 dollars); ovarian cancer 15,000 Yuan (2205 dollars); prostate cancer 20,000 Yuan (2,941dollars); heart disease 20,000Yuan(2,941 dollars).

Figure 6. Cost Comparison of Hip Fracture and Other Diseases



4. Diagnostics

4.a In 1984, China has first SPA, and published the first epidemiology study with SPA. In 1992, the first DXA was imported into China. At present, there are 450 DXA machines and 1100 peripheral bonedensitometry equipment for osteoporosis diagnose in whole China, which has a population of 1.3 billion. That means less than 0.35 DXA per million people. DXA equipments are mainly in big cities in the south-eastern coast rich areas of the country. Beijing, with a population of 16.33 million, has 55 DXA machines, 3.4 DXA per million people, while Shanghai with 18.58 million people has 21 DXAs, 1.5 DXA per million people.

In other medium and small sized cities, QUS and other peripheral bonedensitometry are widely used to diagnose osteoporosis. We can not find exact number of QUS using in China.

In Japan of 2007, there are 128 million people with 12000 DXA, 94 sets of DXA per million people. In Korea, there are 48 million population with 3000 sets of DXA, 63 sets of DXA per million people.

China is a developing country, there is unbalance in economic statue in different city and region. We expect one QUS per 100,000 people in average in China, we need 13000 sets of QUS. This could be help to

find high risk patient to improve the prevention of osteoporosis and related fracture.

X-ray Radiography are also used to diagnose osteoporosis, specially for vertebral fractures. However, because of the lack of knowledge of osteoporosis of Chinese doctors and technicians, most of the osteoporosis patients have not been diagnosed. These patients are not properly treated and many of them have suffered bone fractures which should have been prevented if they were timely diagnosed and treated.

4.b, 4c Cost of both vertebral and hip DXA scan varies from 80 to 400 Yuan (11.7 to 58.8 dollars) and cost for ultrasound varies from 30-100 Yuan (4.4—14.7 dollars). The cost varies because of different levels of development of the city and region.

In China, the prices of medical care were set by regional governments under the direction of the central government. Different regional government has different reimbursement policies for different people. Government officials can enjoy full, or almost full reimbursement, while others who have health insurance are partially reimbursed, the percentage varies depends on different areas.

4.e; 4.f The length of wait for DXA scan is usually 1-2 days, ultrasound can be done on the same day if it is available in the hospital.

4.g The equipment is only available in urban centers, specially in large cities like Beijing, Shanghai, and Chongqing, Guangzhou et al.

* Due to no data published in China, so the figure in this paragraph was got from Bone Densitometry Equipment company and Pharmaceutical companies.

5. LIFESTYLE PREVENTION

Osteoporosis prevention is restricted in urban areas in China. According to a recent urban residents survey of 56,630 people (12,332 men and

44,298 women) , 57.2% of them had heard about osteoporosis; 57.8% knew milk was benefit to bone health; 42.2% knew exercises was good for bone; 32.7% aware that more sunshine was good bone. 37% of the surveyed people(29.5% men and 33.5% of women), were taking calcium daily and 47.1% of them believed that taking calcium could prevent osteoporosis⁽³¹⁾.

About the resources of information about osteoporosis, half of the survey people would like to get the information from TV. Quite few hopes to get information from Commercial company, even few people would like to get from internet ⁽³¹⁾. Till present, we did not have any data from rural area.

In China, since the advertisement of Milk Product Factory on TV, more and more people, particular young people start to drink milk. Calcium and vitamin D fortified product is quite common.

In another survey of 1420 people who age between 20-60, worked in the office in China in 2007, we found the BMD of whom drink 300ml milk per day is about 6-7% higher than whom seldom even never drink milk. The BMD of whom exercise more than 40 minutes per week is 8~10% higher than whom has less than 20 minutes exercise per week⁽³²⁾.

6. TREATMENT

Pharmaceutical therapies for osteoporosis are quite different from urban and rural areas and from south to north of the country. Hormone replacement therapy (HRT) 、 Selective Estrogen Receptor Modulator(SERM) 、 various Bisphosphonates (oral, injection and iv drip with daily, weekly, monthly, quarterly and annually et al)、 Calcitonin have been used for osteoporosis treatment for 5~10 years in urban areas, especially in large cities. Teriparatide (PTH) and Strontium

Ranelate concluded their clinical trials and have been approved by the government for clinic treatment. Traditional Chinese herbal formula XIANLINGGUBAO (XLGB) were the most widely accepted by the people to prevent osteoporosis. They are also included in the reimbursement list of state health insurance. In China there are some traditional health products to strengthen the bone and muscle strength and relieve the pain of bone and joint, such as GUQINGCHUN(GQC). The health care insurance approved drugs include: : XLGB, α -Calcitriol、Alandronate、Etidronate、Residronate, Calcitonin、Premarine、Tibolone、Raloxifen(SERM), XLGB。PTH and Ranelate Strontium and health product such as Calcium, Vitamin D and GQC were not yet included in the reimbursement list. According to the insurance policies, some of the drugs were reimbursed only for severe osteoporosis patients and most of anti-osteoporosis drug were only reimbursed for women, but not for men. All drugs for osteoporosis are prescription medicines, only traditional Chinese medicine(formula), XLGB, calcium Vitamin D and other health products can be sold as OTC in drug store. There is no oral Vitamin D available in China.

7.GOVERNMENT POLICIES

So far, osteoporosis has not yet recognized as a major health problem by the Chinese government. The government and NGOs are gradually paying more attention to osteoporosis. They are organizing more and more training classes and seminars on osteoporosis as CME (continue Medical Education) event annually.

1984—China imported its first Bonedensitometer (SPA) .

1987—The first Chinese academic meeting was held in Shanghai under the sponsorship of Novartis.

1990—Osteoporosis Committee of China Geratology Society as the first osteoporosis NGO association was established. At present, there are

osteoporosis associations in all the 32 provinces and large cities of China.

1992—The Chinese government approved to hold the first international osteoporosis congress in Beijing.

1994—The Chinese Health Ministry for the first time listed osteoporosis research in the state's Ninth Five Year Plan and it continued to the Eleventh Five Year Plan.

1995—The first Journal of "China Osteoporosis Magazine" was published.

1996—The first Chinese Traditional Formula Xian Ling Gu Bao was approved by China FDA to prevent and treat Osteoporosis

1998—China state Food and Drug Administration Bureau approved the first chemical drug, Alandronate (Gu Bang.) to be used in osteoporosis treatment.

2001—The State Science and Technology Ministry approve for the first national award for Osteoporosis, the China Pharmaceutical Developing Award of Healthstar Osteoporosis Medical Research

2001—The Chinese Science and Technology Development Foundation set up the first osteoporosis funding

2001—The China State Science and Technology Ministry approved to hold annual international osteoporosis congress.

2003—The Chinese Health Ministry conducted the first international cooperative project of Chinese Peak Bone Mass and the Normative BMD database of Chinese Health Adult in 13 Chinese cities.

2003—The first International Bone Measurement Quality Control Workshop and ISCD course were held with the approval of the health ministry.

2005—Osteoporosis drugs entered the list of health care insurance, it marks that osteoporosis treatment is officially recognized by the government.

2006—Initiated by the China Science and Technology Development Foundation, the first patient oriented non-profit Silver Ribbon Osteoporosis Prevention Program was launched, and conducted nationwide osteoporosis surveys and education projects, it is expected that

more than 50,000 people will be benefit from this project by Oct. 2009.
2008 — Chinese Health Promotion Foundation signed cooperation memorandum with IOF, with the support of Ministry of Health.

7.c At present, there's no government public awareness programs, covering prevention, diagnosis and management of Osteoporosis. But the government supported NGOs to conduct nationwide social project to raise the public awareness of the society, such as Hand-in-Hand Osteoporosis awareness project, Silver Ribbon Osteoporosis Prevention Action(Sponsored by Tong Ji Tang Phamar), I LOVE MILK campaign (sponsored by Tetral Pak).

7.d There are three guidelines for osteoporosis diagnosis and management in China: In 1999, “ Guideline of Osteoporosis Diagnosis” set up by Osteoporosis Committee of Chinese Geratology Society. In 2007“The guideline of primary osteoporosis diagnosis and management” set up by Osteoporosis and Bone Mineral Society of Chinese Medical Association; In 2008, “Guideline of Osteoporosis Fracture Management” published by Orthopedic Society of Chinese Medical Association⁽³³⁾. There are no government approved guideline for now.

7.e At present, health professional trainings are carried out by academic societies with the support and approval of Health Ministry, and there is no government set guidelines for professional training.
So far, osteoporosis prevention and treatment are not included in medical college education text book.

8.Patient Awareness

There are four national societies and foundations active in osteoporosis prevention. They are China Health Promotion Foundation, Osteoporosis

Committee of Chinese Geratology Society、 China Orthopedic Society of CMA、 Osteoporosis and Bone Mineral Society of CMA.

Active corporate partners in China: Tongjitang, Novartis, Wyeth, MSD, GE Healthcare, Servier according to the funding which has been used to support osteoporosis related research, meeting, workshop, conference in China.

Specific awareness campaigns run by NGO and results include:

1. Silver Ribbon Osteoporosis Prevention Action;
2. Website, China Osteoporosis Forum -- <http://www.cof.org.cn>
3. I LOVE MILK campaign
4. National Fracture Prevention Plan
5. Hand-in-Hand Bone Health Campaign

At present, Silver Ribbon Action is the most influential and widely covered non-profit patient awareness programs in China, which is sponsored by China Health Promotion Foundation.

9. Health care professional awareness

Osteoporosis is obviously neglected in most of Chinese hospitals. According to a survey from pharmaceutical company conducted in Shanghai large hospitals, only 3% of the total 2890 hip fracture patients survey has bone mass measured, and only 15.8% women and 10.7% men received osteoporosis drug therapies, including calcium.

Another survey, conducted in the Orthopedic Department of Jishuitan hospital with the orthopedic surgeon from many provinces and large cities, showed that 70.1% health care professionals knew diagnose osteoporosis needs bone mass check, and only 53.5% of them knew drinking, smoking and menopause women were associated with osteoporosis⁽³⁴⁾.

10.RECOMMENDATION

10.a Important setbacks/problems.

Though osteoporosis prevention and treatment have started in China for

more than 20 years, people's awareness of this disease has much to be raised. At present, all treatments, prevention and education efforts are limited in cities, people in rural areas have little knowledge about this disease.

1. Significant underestimation of the burden imposed by osteoporosis in China.
2. Under diagnosing of osteoporosis and under treatment of osteoporosis.
3. Under recognition because of lack education program
4. Lack funding to support professional training and public education program

Recommendation:

China is a big developing country with wide area, multi-nation, multi-culture, unbalance economic statue, but with the largest population of osteoporosis and low bone mass. Find high risk population to prevent osteoporosis is the most important task we should take. After the investigation above, we would like to recommend as following:

To Government:

1. Increasing funding on basic and clinical research on Osteoporosis and public education program
2. Establish professional training program and put the Osteoporosis Education Material in Medical College test book.
3. Improve capability of Osteoporosis diagnosis by equipping hospitals with DXA in the cities and affordable, mobile and easy-to-run diagnosing instruments in community healthcare.
4. Issue National Guideline on Osteoporosis Diagnosis and Treatment.
5. Expand reimbursement items for osteoporosis treatment drugs for both men and women, and people with fracture history et al.
6. Raising awareness about drugs that can be harmful to bones.

To Health care Professional:

1. Distribute Osteoporosis brochure, one-minute test, public education class; Equipped at least one peripheral bone densitometry for screen

test in each hospital.

2. Encouraging to attend professional training of Osteoporosis Diagnosis and Treatment as CME
3. Education physician and surgeon to take care the bone health, avoid drugs which may worse the bone mass and quality, protect the bone when the drugs must be used in the treatment.

To Individual:

1. In taking calcium rich food(encouraging milk and milk product intake)
2. Encouraging more sunshine (20 minutes at least) per day,
3. Encouraging weight bearing exercises (20 minutes of walk) per day ;
4. Giving up drinking alcohol and smoking cigarettes;
5. Reading education material in the clinic waiting area;
6. Attending public health class at least once per year.
7. Having bone measurement according to WHO guidelines recommendations or when risk factors are present.

Reference

1. National Bureau of Statistics of China. Tabulation on 2000 Population Census of China, China Statistics Press. (Vol 1), 2002 Nov.
2. National Bureau of Statistics of China. Tabulation on 20007 Population Census of China, China Statistics Press. (Vol 1), 2007 Sep.
3. The Fifth Population Census Office under the State Council, China's Population at the turn of the centuries (Vol Whole country). China Statistics Press. 2006,5.
4. China Population Information and Research Center: <http://www.cpirc.org.cn/est2.htm> 2002-09-19
5. You Y. Zheng X. Mortality and Health of Chinese Population, 2005 Mar. Beijing University Press.
6. Xie K. Prevalence of Osteoporosis in the elderly population of Shanghai, Chinese Journal of Geriatrics 1983, 6:28-29
7. Zhu H, Wang Z, Chen S, et al, Investigation of the Risk Factors and Prevalence of Primary Osteoporosis (2041cases report) , National Medical Journal of China, 1990, 70 (5) : 248-251

8. Li N., Ou P., Zhu H., et al., Study of Prevalence of Primary Osteoporosis in Middle and Aged population in some regions of China. Chinese Journal of Orthopaedics, 2001, 21 (5) : 275~278.
9. Zhu H., Fang J., Luo X., Yu W., Zhao Y. et al., Bone mass epidemiology: bone mass change and mean peak bone mass for mainland China. Proceeding of International Osteoporosis Conference China bone and joint decade, Oct19~21 st, 2007, P. 4~18, Beijing, China.
10. Xian-Ping Wu, Er-Yuan Liao, Hong Zhang et al. Establishment of BMD reference plots and determination of peak BMD at multiple skeletal regions in mainland Chinese women and the diagnosis of osteoporosis[J]. Osteoporosis Int, 2004, 15(1): 71—79
11. Liao E., Wu X., Deng X., et al. Study of BMD in Female population in Changsha of China [J]. Chinese Journal of Endocrinology and Metabolism, 2000, 16 (4) : 203—207
12. Wang W., Ma J., Yang D., et al. Study of BMD in Middle and Aged Population in Cheng [J]. Chinese Journal of Osteoporosis, 2000, 6 (1) : 40—43
13. Wu Q., Tao G., Liu X., et al. , Study of Prevalence of Osteoporosis in Beijing and 1333 BMD Measurement of 1333 people in Beijing[J]. Chinese Journal of Osteoporosis, 1995, 1(1):76—80
14. Zhao X., Jin A., Zhang X., Study of Prevalence of Primary Osteoporosis in Ji Lin Province[J]. China Journal of Modern Medicine, 2008, 18 (8) : 1084—1089
15. Gao J., Suo P., Zheng J., et al. BMD measurement report of 1385 people in Jiang Men[J]. Journal of Jinan University (Natural Science & Medicine Edition) .2003,24 (6) : 75—78
16. Meng Y., Wei J., Long L., et al. Study of Prevalence of Osteoporosis in Middle and Aged Population in Liu Zhou [J]. Journal of Qiqihar Medical College, 2006, 27 (15) : 1851
17. Ou P., Deng L., Liu Y., et al. Investigation of Prevalence of Osteoporosis and Osteopenia in Middle and aged Population in Guangzhou. [J]. Chinese Journal of Osteoporosis, 2002, 8 (4) : 314—317
18. Chen C., Xing X., Ye S. et al. Study of BMD measurement in 1162 normal people in Hefei Region [J]. Chinese Journal of Osteoporosis 2008, 14 (6) : 419—421
19. Zhou J., Liu H., Jiang S., et al., Analysis of Osteoporosis Prevalence and Bone Measurement in 2288 people in Shenyang [J]. Journal of China Clinic Medical Imaging 2008, 19 (2) : 121—124
20. Shen L., Yang Y., An R., et al. Analysis of Prevalence of Osteoporosis and Bone Measurement of 1359 people in Wuhan. [J]. Chinese Journal of Osteoporosis. 2001, 7 (3) : 232—234

21. Zhu H., Zhang Y., Zhu X., et al., The Change of Osteoporotic Fracture Rate in Elderly within 8 years. *Geriatrics & Health Care*, 2003, 9 (6) : 89~92.
22. Luo L., Xu L., Analysis of Direct Economic Burden of Osteoporotic Hip Fracture and Its Influence Factors. *Chinese Journal of Epidemiology*. Vol.9 of 2005
23. Xu L., Cummings, Qin M., et al., Epidemiology Study of Spine Fracture in elderly Female in Beijing. *Chinese Journal of Osteoporosis*, 1995,1(1) : 82-83
24. An Z., Yang D., Zhang Z., Jiang J., Shen J., Xu J., Investigation and Analysis of Epidemiology of Osteoporotic Vertebral Fracture. *Chinese Journal of Osteoporosis*, 2002,8 (1) : 82-83
25. Zhu H., Zhang Y., Ge H., et al., Investigation of Milk Product Consuming and the Prevalence of Spine Fracture in Elderly women. *Proceeding of the 3rd. Shanghai Osteoporosis Symposium*, 2004, 7, 23-24 p.146
26. Wang P., Wang P., Tang Y., Cai D., 2000-2004 Statistics of Cost of the Management of Osteoporotic Fracture. *Chinese Journal of Osteoporosis*, Vol 3. of 2006
27. Huang Y., Zhu B., Zhang H., Statistics and Analysis of the Cost of Inpatient Hip Fracture Management (1998-2003) *Chinese Journal of Osteoporosis* Vol. 2 of 2005
28. Fu S., Hu J., Luo S., Xu Y., Statistics of the Cost of Inpatient Osteoporotic Fracture Management(1996-2001) , *Chinese Journal of Osteoporosis* 2003, 9 (2) : 137-140
29. Shen Q., Xie Q., Xia H., Statistics of Primary Osteoporotic Fracture Management in 2003, *Chinese Journal of Osteoporosis* Vol. 2 of 2006
30. He L. et al., Statistics on the Expenses for Medical Care of Osteoporotic Fractures in Beijing Jishuitan Hospital (From 2000 to 2006), *Proceeding of International osteoporosis conference*, Oct.19~21st, 2007, P.49 Beijing, China
31. Zhu H., Zhang Y., Yang J., Shen Q., Investigation of Urban Citizen Recognizing of Calcium taking and Bone Health., *Proceeding of the 2nd China South Osteoporosis Forum* 2006, Apr.21—23rd, Shanghai,p.2
32. Zhao Y. Du J. Lee X. et al. Report of the Bone Mass Density in the Population who works in Office (2003-2005). *Xinhuanet*, Oct. 20th, 2008
33. China Orthopedic Society, Guideline of the diagnosis and management of Osteoporotic Fracture, *Chin J Orthop*, October 2008, Vol.28, No.10 P875-878
34. He L., et al. Did Orthopedic Surgeon Pay Attention to Prevention and Treatment of Osteoporotic Fracture? *Proceeding of International osteoporosis conference*, Oct.19~21 st, 2007, P.47 Beijing, China

中国健康促进基金会简介

中国健康促进基金会（以下称基金会），是中华人民共和国卫生部主管、2006年12月18日经国家民政部批准正式登记注册的全国公益性公募组织；是由中国人民解放军总后勤部卫生部原部长白书忠同志任理事长（法人代表）、国家中医药管理局原副局长于生龙等同志任副理事长、一批医药界专家学者及社会活动家、企业家组成的独立社会团体。

基金会宗旨：募集资金，开展健康促进活动，推动健康促进事业的发展，为增强全民健康素质服务。

基金会会徽含义：以五个充满活力的人构成的梅花图形为主题，象征健康与快乐、人与自然的和谐，也表达着基金会以人为本、人人参与、为增强全民健康素质服务的宗旨。会徽采用红色为整体色，表达基金会健康促进事业发展的美好前景。会徽外周以“中国健康促进基金会”中英文环绕，表达基金会与国际广泛交流与合作。

基金会工作目标：办实事、求实效、谋发展，团结一致、齐心协力，力争把本会办成具有较大社会影响力的社团组织，为推动和发展我国的健康促进事业做出应有贡献。

基金会业务范围：（一）以国家制订的健康教育与健康促进工作规划纲要为指导，募集资金，协助政府开展健康促进活动；（二）支持边远贫困地区健康教育和健康促进机构建设，推动和发展城乡健康促进事业；（三）支持健康教育与健康促进专业人员培训；（四）支持健康促进研究和开展国内外学术交流与合作；（五）组织编辑

出版健康促进书刊，普及健康促进知识；（六）建立健康促进分支机构，协助相关部门开展健康促进服务活动；（七）奖励在健康促进领域里做出突出成绩的贡献者。

基金会设有理事会、监事委员会、专家委员会和秘书处，秘书处下设有办公室、基金募集部、公益事业部、信息与宣传部、财务部和分支机构等。

基金会是开展公益活动的社团组织，将严格遵守国务院颁发的《基金会管理条例》和本会章程，珍惜社会的捐赠，管好用好募集资金，以良好的业绩回报社会。基金会监事会将基金会的财务活动进行全程监控，并接受社会公众的查询、监督。希望社会各界参与和支持基金会的工作，共同开创我国健康促进事业的新局面，为构建和谐社会贡献自己的力量。



国际骨质疏松基金会 (IOF)

IOF(International Osteoporosis Foundation) 为国际性非政府组织 , 1987 年以欧洲骨质疏松基金会 (EFFO) 在瑞士伯尔尼注册。 1998 年 EFFO 与成立于 1995 的国际骨骼疾病学会联合会(IFSSD)合并。现有包括从事基础研究的科学家、临床医生、患者协会和合作者在内的 172 个成员学会 ,其宗旨是提高人们对骨质疏松的认识、预防、早期发现和更合理的治疗的能力。拥有 : Osteoporosis International , Progress in Osteoporosis 学术刊物。

骨质疏松症中国白皮书

编委会名单

一、执行编委成员：

名誉主任： 白书忠 中国健康促进基金会理事长
中华医学会副会长

祁国明 中华医学会副会长

主任委员： 朱汉民 上海华东医院骨质疏松防治研究中心

编委会委员：常映明 中国健康促进基金会秘书长

胡侦明 重庆医科大学附属第一医院

薛庆云 北京医院骨科

赵燕玲 北京和睦家医院妇女健康中心
中国健康促进基金会国际部

程晓光 北京积水潭医院放射科

杜 建 北京结核病胸部肿瘤研究所

二、顾问编委：

方积乾 中山大学公共卫生学院

劳汉昌 昆明医学院第二附属医院

罗先正 首医大附属北京友谊医院

王洪复 复旦大学放射医学研究所

杨定焯 华西第四医院骨质疏松科

三、通讯编委:

裴福兴 四川大学华西医院骨科
余 卫 北京协和医院放射科
郝永强 上海第九人民医院骨科
李晓林 上海交通大学第六人民医院骨科
张 寿 海口市人民医院骨科
施慧鹏 上海交通大学第六人民医院骨科
谷贵山 吉林大学第一附属医院骨科
赵咏芳 上海曙光医院
晁爱军 天津医院骨科
季学磊 安徽省芜湖市第二人民医院
李雪松 中国健康促进基金会骨质疏松专项基金管理
委员会
陆雅芳 中国健康促进基金会“银丝带骨质疏松防治
公益行动”新疆工作站负责人