

Health Check-Up Program for Pre/Postmenopausal Women at Siriraj Menopause Clinic

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Objective: To determine the general health status of pre/postmenopausal women attending the menopause clinic.

Study design: Retrospective descriptive study.

Setting: Siriraj Menopause Clinic, Gynecologic Endocrinology Unit, Division of Reproductive Medicine, Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University.

Study population: Pre/postmenopausal women (i) presumed to have no medical disease (no disease group) or (ii) with unknown status of medical disease (no record group) and undergoing health check-up program at the time of registration without prior hormone therapy.

Material and Method: Medical records of new patients registering at the menopause clinic from January 1999 to December 2005 were reviewed.

Results: Among 1,020 patients undergoing health check-up program, there were 366 patients in the no disease group. They had abnormal health parameters listing by frequency of prevalence including hypercholesterolemia (62.3%), suboptimal blood pressure (49.3%), overweight to obese (30.2%), suboptimal fasting blood sugar (27.9%), hypertriglyceridemia (21.3%), abnormal liver function tests (5.4-6.9%), and abnormal kidney function tests (0.5%). The prevalence of dyslipidemia was statistically higher in the no record group compared to the no disease group; such abnormal parameters included hypercholesterolemia (≥ 200 mg/dL), high blood level of low density lipoprotein cholesterol (LDL-C ≥ 130 mg/dL), and high ratio between LDL-C and high density lipoprotein cholesterol (LDL-C/HDL-C ratio >3). Osteoporosis was found in 6.6% of the patients. Abnormal mammographic findings that needed close follow-up or breast biopsy were found in 13.5%. Twelve patients had breast biopsy and none had breast cancer.

Conclusion: Abnormal health parameters are common in pre/postmenopausal women presumed to have no medical disease. The similar or even worse findings are also found in those whose status of medical diseases was unknown. Therefore, a routine health screening program, especially for metabolic diseases, should be offered to pre/postmenopausal women regardless of their medical history.

Keywords: Health, Check-up, Menopause

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Pre/postmenopausal women are not only in the expiring period of their reproductive system but they are also in the deteriorating phase of other organ systems. Apart from various health problems related to the cessation of ovarian function, pre/postmenopausal

women also encounter various chronic degenerative diseases. Therefore, taking care of pre/postmenopausal women needs a holistic approach under the principle of preventive medicine that includes prevention, early detection, treatment, and rehabilitation. Siriraj Meno-

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pause Clinic was formally established on 1 December 1993. Until now, more than 4,000 pre/postmenopausal women registered at the clinic and have been taken care of with one or more of the aforementioned strategies. Nowadays, all new patients are introduced to the authors' health promotion program developed by a care team to cover the prevention and early detection of degenerative diseases. Briefly, the prevention is by a health education program to promote a healthy lifestyle and the early detection is by a health check-up program to screen for common health problems.

Since a health check-up program has relatively high cost compared with a health education program, it would be beneficial to evaluate the necessity of the program's components. The objective of the present study was to determine the prevalence of abnormal health check-up parameters in pre/postmenopausal women who were presumed to be healthy at the time of registration at a menopause clinic.

Material and Method

This retrospective study was conducted in Siriraj Menopause Clinic, Gynecologic Endocrinology Unit, Division of Reproductive Medicine, Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University. Medical records of pre/postmenopausal women attending the Siriraj Menopause Clinic from January 1999 to December 2005 were reviewed.

Study population

Patients included to the present study were women 40 years of age or older who underwent a health check-up program at the time of registration at the clinic, and never had hormonal therapy prior to the check-up program. The patients were categorized into (i) no disease group, i.e. those who had a complete medical record and were presumed to have no medical disease; (ii) no record group, i.e. those whose medical records were incomplete and status of their medical diseases was inconclusive; and (iii) presence of a disease group, i.e. those who were known to have the medical diseases that probably affected laboratory values including diabetes mellitus (DM), hypertension (HT), dyslipidemia, coronary heart disease (CHD), liver and kidney diseases. The presence of a disease group was excluded from the analysis.

Health check-up program

The authors' health check-up program aimed to screen for common health problems found in pre/

postmenopausal women, i.e. risk factors for coronary heart disease, hypertension, diabetes mellitus, and common female cancers (cervical and breast cancers). The program included medical history review, general physical examination, pelvic examination, and laboratory investigations. The investigations were divided into routine and optional investigations.

Medical history and physical examination were recorded in a structured record form that had undergone three revisions since the setting up of the clinic. Pelvic examination and Papanicolaou (Pap) smear was usually performed at the Outpatient Gynecologic Department before the patients had a registration visit at the menopause clinic. The patients with obvious gynecologic problems including abnormal Pap smear were evaluated and treated before referring to the clinic. Therefore, the prevalence of abnormal gynecologic problems or abnormal Pap smear in the health check-up program at the Siriraj Menopause Clinic could not be evaluated. Body mass index (BMI) was calculated and categorized into underweight, normal, overweight, and obese, according to the classification by the WHO⁽¹⁾. Blood pressure was categorized into normal, prehypertension, stage 1 and 2 hypertension, according to the seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7)⁽²⁾.

Routine laboratory investigations included fasting blood sugar (FBS), blood urea nitrogen (BUN), creatinine, uric acid, cholesterol (Chol), triglyceride (TG), high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), aspartate aminotransferase (AST or SGOT), alanine transaminase (ALT or SGPT), and alkaline phosphatase. Blood was collected in the morning after a 12-hour fasting period. The biochemical assays were performed by the Department of Clinical Pathology using automatic systems with various relevant methods including hexokinase method (FBS), enzymatic method (BUN, AST, ALT, alkaline phosphatase, Chol, TG, HDL-C, directed LDL-C), modification of the kinetic Jaffe reaction (creatinine), and uricase method (uric acid). All methods for biochemical assay had inter- and intra-assay coefficients of variation (CV) within 5%. FBS was categorized into normal, prediabetes, and diabetes, according to the 2003 American Diabetes Association (ADA) classification⁽³⁾. Cholesterol, LDL-C, HDL-C, and TG were categorized according to the third report of the National Cholesterol Education Program (NCEP ATP III) classification⁽⁴⁾.

Optional laboratory investigations, which were prescribed upon patients' request or according to their risks, were bone mass density (BMD) and mammography. The BMD was measured using a bone densitometer (LUNAR Expert #1189 from 1996 to 2005 or LUNAR Prodigy DF + 15974 from 2004 to present) by well trained technicians at the Division of Endocrinology and Metabolism, Department of Medicine. Osteoporosis was diagnosed from the BMD at lumbar spine or femoral neck according to the WHO criteria⁽⁵⁾, i.e. BMD t-score ≤ 2.5 . Mammography was performed by well-trained technicians. The mammogram was evaluated and reported by radiologists who specialized in mammography interpretation at the Siriraj Breast Center.

Statistical analysis

Data were expressed in mean \pm standard deviation (SD) or number (%), or illustrated in the bar graph. Since some patients may undergo only some components of the check-up program, the sample size (N) of one variable might be different from that of another variable. Therefore, the data of each variable was analyzed based on the valid number. Chi-square test was used to compare categorical data between the no disease and the no record groups. A p-value of < 0.05 was considered statistically significant.

Results

From January 1st, 1999 to December 31st, 2005,

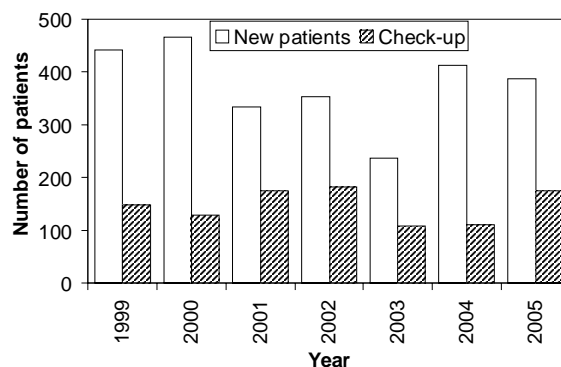


Fig. 1 Annual number of new patients registering to Siriraj Menopause Clinic and number of patients undergoing health check-up program

there were 2,630 new patients registering to Siriraj Menopause Clinic. Fig. 1 demonstrates the annual numbers of new patients and the number of patients who underwent a health check-up program revealing that 39.0% of new patients at this clinic received the health check-up program (annual rate varied from 26.9% to 52.6%). Among 1020 women, ≥ 40 years old, who underwent the health check-up program during the 7-year study period, 366 cases (35.9%) were presumed to have no medical disease (no disease group), 375 cases (36.8%) had no record of medical history (no record group), and 279 cases (27.3%) were known to have medical diseases (presence of medical disease group).

Table 1. Characteristics of pre/postmenopausal women presumed to have no medical disease and undergoing health check-up program before hormonal therapy at Siriraj Menopause Clinic from January 1999 to December 2005

Characters	N	Mean \pm SD or n (%)
Age at registration (yr)	366	51.5 \pm 4.9
Menopausal status	366	
- Perimenopause		115 (31.4)
- Natural menopause		177 (48.4)
- Surgical menopause		74 (20.2)
Reasons to attend menopause clinic	366	
- Menopausal symptom		278 (76.0)
- Check-up request		37 (10.1)
- Others		51 (13.9)
Economical status	215	
- Not enough		3 (1.4)
- Enough		117 (54.4)
- More than enough		95 (44.2)
Family history of cancer	315	68 (21.6)
Family history of fracture	315	21 (6.7)
Family history of cardiovascular disease	315	31 (9.8)

Table 2. Health check-up parameters of patients presumed to have no medical disease and undergoing health check-up program before hormonal therapy at Siriraj Menopause Clinic from January 1999 to December 2005

Parameters	N	No disease (n (%))
Body mass index	324	39 (12.0)
- Underweight (< 20.0 kg/m ²)		187 (57.7)
- Normal (20.0-24.9 kg/m ²)		86 (26.6)
- Overweight (25.0-29.9 kg/m ²)		12 (3.7)
- Obese (≥ 30 kg/m ²)		
Systolic blood pressure	335	
- Normal (< 120 mmHg)		170 (50.7)
- Prehypertension (120-139 mmHg)		136 (40.6)
- Stage1 HT (140-159 mmHg)		28 (8.4)
- Stage2 HT (≥ 160 mmHg)		1 (0.3)
Diastolic blood pressure	335	
- Normal (< 80 mmHg)		212 (63.3)
- Prehypertension (80-89 mmHg)		90 (26.9)
- Stage1 HT (90-99 mmHg)		31 (9.3)
- Stage2 HT (≥ 100 mmHg)		2 (0.6)
Fasting blood sugar	341	
- Normal (< 100 mg/dL)		246 (72.1)
- Prediabetes (100-125 mg/dL)		95 (27.9)
- Diabetes (≥ 126 mg/dL)		0 (0.0)
Cholesterol ≥ 200 mg/dL	353	220 (62.3)
Triglyceride ≥ 150 mg/dL	352	75 (21.3)
HDL-C < 40 mg/dL	333	21 (6.3)
LDL-C (mg/dL)	333	
- < 100		43 (13.0)
- 100-129		105 (31.5)
- 130-159		115 (34.5)
- 160-189		50 (15.0)
- ≥ 190		20 (6.0)
TC/Chol ratio ≥ 4.5	352	0 (0.0)
LDL-C/HDL-C ratio ≥ 3	333	73 (21.9)
Blood urea nitrogen (> 20 mg/dL)	203	1 (0.5)
Creatinine > 1.5 mg/dL	203	1 (0.5)
AST > 37 U/L	202	14 (6.9)
ALT > 40 U/L	202	11 (5.4)
Alkaline phosphatase >117 U/L	202	14 (6.9)

Note AST = aspartate aminotransferase, ALT = alanine transaminase, Chol = cholesterol, HDL-C = high density lipoprotein cholesterol, HT = hypertension, LDL-C = low density lipoprotein cholesterol, TC = triglyceride

Demographic data of the no disease group are demonstrated in Table 1. They were 51.5 ± 4.9 years old and the majority was in postmenopausal status, either natural or post surgical. Only 10% of the patients attended the clinic because they wanted to have a health check-up.

The findings of routine health check-up parameters in the no disease group are demonstrated in Table 2. Abnormal health parameters listing by frequency of prevalence were hypercholesterolemia (62.3%), suboptimal blood pressure (49.3%), overweight

to obese (30.2%), suboptimal fasting blood sugar (27.9%), hypertriglyceridemia (21.3%), abnormal liver function tests (5.4-7.0%), and abnormal kidney function tests (0.5%). Compared with the no record group, the no disease group had a lower prevalence of cholesterol ≥ 200 mg/dL (62.3% vs 73.7%, $p = 0.001$), LDL-C ≥ 130 mg/dL (55.5% vs 63.8%, $p = 0.006$), and LDL-C/HDL-C ratio > 3 (21.9% vs 32.0%), $p = 0.003$ (Fig. 2).

The results of optional investigations, BMD (n = 213) and mammogram (n = 348), are demonstrated in Fig. 3. Osteoporosis was found in 14 cases (6.6%) of

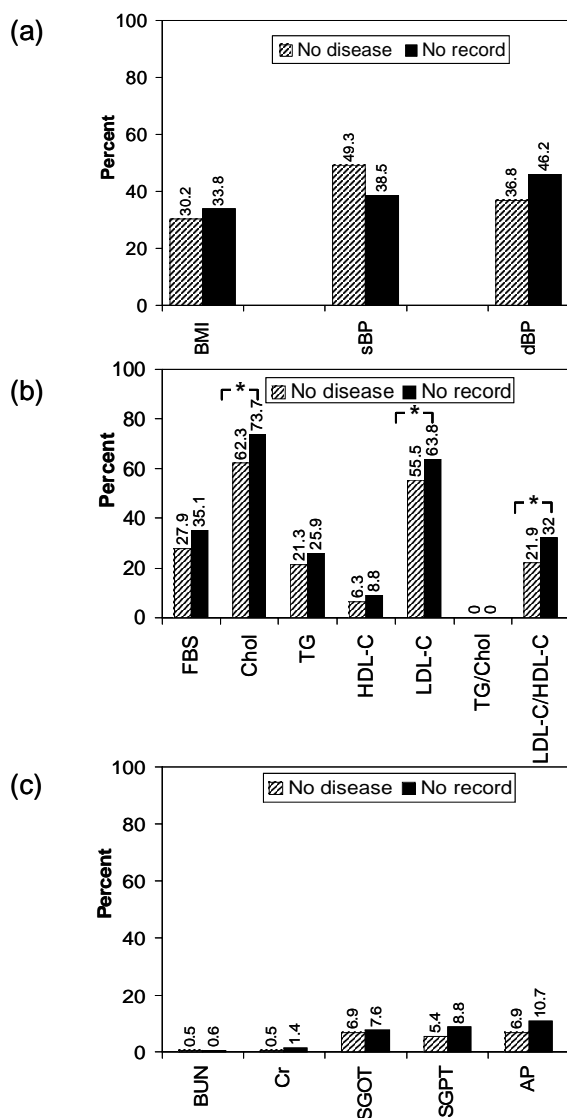


Fig. 2 Prevalence of abnormal health check-up parameters in the patients presumed to have no medical disease (no disease group) and the patients without a record of medical diseases (no record group): (a) body mass index and blood pressure; (b) fasting blood sugar and lipid profiles; (c) kidney and liver function tests; AST = aspartate aminotransferase > 37 U/L, ALT = alanine transaminase > 40 U/L, AP = alkaline phosphatase > 117 U/L, BMI = body mass index ≥ 25 kg/m², sBP = systolic blood pressure ≥ 120 mmHg, dBP = diastolic blood pressure ≥ 80 mmHg, BUN = blood urea nitrogen > 20 mg/dL, Chol = cholesterol ≥ 200 mg/dL, FBS = fasting blood sugar ≥ 100 mg/dL, HDL-C = high density lipoprotein cholesterol < 40 mg/dL, LDL-C = low density lipoprotein cholesterol ≥ 130 mg/dL, TG = triglyceride ≥ 150 mg/dL, * = statistically significant difference

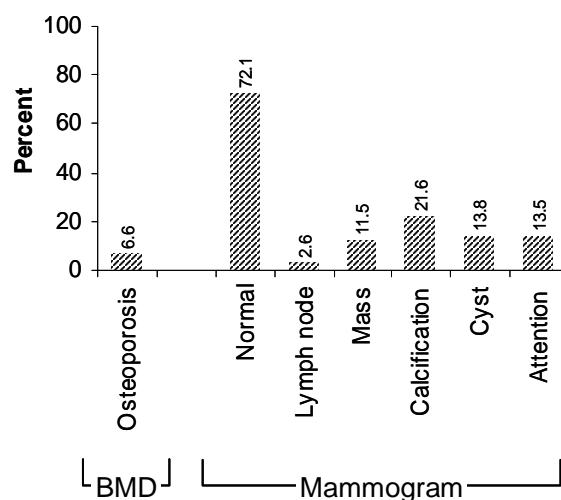


Fig. 3 Results of bone mass density (n = 213) and mammography (n = 348); BMD = bone mass density, Normal = report of normal mammogram

the present study population. Abnormal mammographic findings varied from 2.6% (presence of lymph nodes) to 21.6% (calcification). The attention notification, either suggestion of close follow-up or breast biopsy, was found in 13.5% of the mammographic reports. Breast biopsy was performed in 12 patients and their pathological report included normal breast tissue (6 cases), fibroadenomatous hyperplasia (3 cases), and fibrocystic change (3 cases). None of them had breast cancer.

Discussion

Health check-up programs have been developed by various medical sectors worldwide. Although there are some differences in the programs' components, the programs are developed under the same principle that they screen for common health problems of the specific population and return a cost benefit to the community. According to the vital statistics of the Ministry of Public Health of Thailand, the top three medical diseases that were causes of death among Thai women during 1997 to 2000 were heart disease, cancers, and hypertension or stroke⁽⁶⁾. Therefore, a health check-up program for Thai women should include the screenings of these diseases.

Among the routine screenings in the present study, the common abnormal health parameters included dyslipidemia, suboptimal blood pressure and fasting blood sugar, and overweight. In fact, these abnormal

parameters are among the risk factors of metabolic syndrome^(2,4) that increases the risk for cardiovascular disease. Moreover, the two most common abnormal health parameters in the present study population were dyslipidemia and hypertension as they are the strongest predictors for coronary heart disease^(7,8) and cerebrovascular disease⁽²⁾. The high prevalence of dyslipidemia in the present study was not unexpected since previous studies in the postmenopausal Thai women^(9,10) and in the Thai elderly⁽¹¹⁾ revealed similar results. Because of the high prevalence and the powerful predictability to the serious consequences, screening for the aforementioned health parameters would be beneficial.

Routine screening for liver and kidney diseases in the presumed healthy pre/postmenopausal women returned less significant results. Prevalence of abnormal liver and kidney functions was < 7% and < 1%, respectively. The authors suggest that these screenings should be reserved for a special purpose rather than for routine screening. Liver function should be screened before offering the patients with the intervention probably adversely affecting liver function, e.g. enteral estrogen therapy. Kidney function should be monitored in the patients with some medical diseases, e.g. diabetes and hypertension.

Optional screenings in the present study aimed to detect osteoporosis and breast cancer. Osteoporosis is one of the major health problems in postmenopausal women because it increases the risk of fragility fracture. The prevalence in general Thai women aged 40-80 years is 20% at the lumbar spine and 13% at the femoral neck and it may increase to 50% in women older than 70 years of age⁽¹²⁾. The gold standard for diagnosis is BMD measurement using Dual-energy X-ray absorptiometry (DXA). Unexpectedly, the prevalence of osteoporosis in the present study was much lower. This might reflect the inappropriate overuse of this technology. To be cost-effective, it is recommended that BMD measurement should not be routinely performed in women younger than 65 years old⁽¹³⁾.

Breast cancer is the second most common cancer of Thai women with a prevalence of 16 per 100,000 persons and more than 40% of cases develop the disease at the age over 40 years⁽¹⁴⁾. Mammography is the effective tool for early detection of breast cancer. There was a report that 10% of the biopsy of suspicious mammographic lesions revealed cancer⁽¹⁵⁾. In the present study, 10% of the mammographic reports had the lesions that needed special attention, either

by close follow-up or by breast biopsy. Interestingly, none of the biopsies from 12 cases showed cancer. Although the present study population was in the high risk age group, the low prevalence of breast cancer in Thai population caused the high false positive screening and unnecessary breast biopsy.

The most common cancer of Thai women is cervical cancer. The authors did not evaluate the prevalence of abnormal Pap smear in the present study because almost all of the patients had a Pap test before registering at our clinic and due to the health care system in the present study hospital the cases were automatically excluded. Nevertheless, the authors recommend routine screening for cervical cancer in pre/postmenopausal women because this cancer is still a major problem in the Thai population.

Conclusion

Abnormal health parameters are common in pre/postmenopausal women presumed to have no medical disease. Similar or even worse findings are also found in those whose status of medical diseases was unknown. Therefore, a routine health screening program, especially for metabolic diseases, should be offered to the pre/postmenopausal women regardless of medical history. Optional screenings should be considered only in the indicated cases.

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โปรแกรมการตรวจเช็คสุขภาพของสตรีก่อนและหลังวัยหมดระดูในคลินิกสตรีวัยหมดระดู โรงพยาบาลศิริราช

สุรศักดิ์ อังสุวัฒนา, พิชัย ลีระศิริ, มณี รัตนไชยานนท์, ประสงค์ ตันมหาสมุทร, จงดี แดงรัตน์, สุชาดา อินทวิวัฒน์,
กิติรัตน์ เตชะไตรศักดิ์

วัตถุประสงค์: เพื่อศึกษาสถานะทางสุขภาพของสตรีก่อนและหลังวัยหมดระดูที่มารับการตรวจในคลินิกสตรีวัยหมด
ระดู

รูปแบบการศึกษา: การศึกษาเชิงพรรณนาแบบย้อนหลัง

สถานที่ทำการศึกษา: คลินิกสตรีวัยหมดระดู หน่วยต่อมไร้ท่อทางนรีเวช สาขาวิชาเวชศาสตร์การเจริญพันธุ์ ภาควิชา
สูติศาสตร์ นรีเวชวิทยา คณะแพทยศาสตร์ศิริราชพยาบาล มหาวิทยาลัยมหิดล

กลุ่มประชากรที่ทำการศึกษา: สตรีก่อนและหลังวัยหมดระดูที่ (1) คาดว่าไม่มีโรคประจำตัว (กลุ่มที่ไม่มีโรค) หรือ
(2) ไม่ทราบสถานภาพของโรคประจำตัว (กลุ่มที่ไม่มีบันทึก) และได้รับการตรวจเช็ค สุขภาพเมื่อลงทะเบียน ในคลินิก
สตรีวัยหมดระดู ร่วมกับยังไม่เคยได้รับการรักษาด้วยฮอร์โมนทดแทนมาก่อน

วัตถุประสงค์และวิธีการ: ทบทวนเวชระเบียนของสตรีที่ลงทะเบียนเป็นผู้ป่วยใหม่ของคลินิกตั้งแต่เดือน มกราคม พ.ศ. 2542
ถึง เดือนธันวาคม พ.ศ. 2548

ผลการศึกษา: จากจำนวนผู้ป่วย 1,020 รายที่ได้รับการตรวจเช็คสุขภาพมีผู้ป่วย 366 ราย อยู่ในกลุ่มที่ไม่มีโรคประจำตัว
ผู้ป่วยมีผลการตรวจเช็คสุขภาพที่ผิดปกติเรียงตามลำดับตามความชุก คือ โคเลสเตอรอลในเลือดสูง (ร้อยละ 62.3)
ความดันโลหิตไม่เหมาะสม (ร้อยละ 49.3) มีน้ำหนักตัวเกินหรืออ้วน (ร้อยละ 30.2) น้ำตาลในเลือดไม่เหมาะสม (ร้อยละ
27.9) มีการทำงานของตับผิดปกติ (ร้อยละ 5.4-6.9) และมีการทำงานของไตที่ผิดปกติ (ร้อยละ 0.5) ความชุกของ
ภาวะไขมันในเลือดผิดปกติมีอัตราสูงกว่าอย่างมีนัยสำคัญทางสถิติในกลุ่มที่ไม่มีบันทึก เมื่อเทียบกับกลุ่มที่ไม่มีโรค
ภาวะผิดปกติดังกล่าว ได้แก่ ภาวะโคเลสเตอรอลในเลือดสูงกว่าหรือเท่ากับ 200 มก./ดล. low density lipoprotein
cholesterol (LDL-C) สูงกว่าหรือเท่ากับ 130 มก./ดล. และอัตราส่วนระหว่าง LDL-C และ high density lipoprotein
cholesterol (HDL-C) มากกว่า 3 ภาวะกระดูกพรุนพบได้ร้อยละ 6.6 ผลการตรวจ mammogram ที่ผิดปกติซึ่งต้องการ
การติดตามผู้ป่วยอย่างใกล้ชิดหรือการตัดตัวอย่างชิ้นเนื้อเต้านมพบได้ร้อยละ 13.5 มีผู้ป่วย 12 รายได้รับการตรวจ
ตัวอย่างชิ้นเนื้อเต้านม ไม่มีรายใดเป็นมะเร็งเต้านม

สรุป: ผลการตรวจเช็คสุขภาพที่ผิดปกติพบได้บ่อยในสตรีก่อนและหลังวัยหมดระดูที่แจ้งว่าไม่มีโรคประจำตัวสตรี
ที่ไม่ทราบประวัติโรคประจำตัวพบความผิดปกติในทำนองเดียวกันหรือแยกว่า ดังนั้นควรทำการตรวจเช็คเพื่อคัดกรอง
ปัญหาด้านสุขภาพ โดยเฉพาะปัญหาที่เกี่ยวข้องกับโรคทางเมตาบอลิก ในสตรีก่อนและหลังวัยหมดระดูทุกรายโดย
ไม่ต้องคำนึงถึงประวัติโรคประจำตัว