Using Risk-Assessment Sheet to Improve Effectiveness of Health Examination Service

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Background: *Several techniques to improve compliance of physicians toward health examination guidelines of many countries were studied. However, the method to improve compliance of Thai physicians toward Thailand s guidelines has never been studied.*
Objectives: *To determine the effectiveness of using risk-assessment sheets to improve the compliance of physicians toward Thailand s health examination service guideline.*
Material and Method: *Risk-assessment sheets were constructed based on recommendations in Guide to Periodic Health Examination and Maintenance for Thai People . One hundr ed and two adult clients who came for health examination service from January to March 2003 were asked to fill in risk-assessment sheets and compared them with 103 recorded health examination report from the hospital s computer before the risk-assessment sheets were developed.*
Results: *Clients using the risk-assessment sheets group received recommended health examination significantly more than those in the non-using group ($p < 0.01$). In the using group, rates of providing chest x-ray, tumor markers and average number of laboratory investigations were statistically significant lower ($p < 0.01$) and contrary to the rate of Pap test was statistically significant higher ($p < 0.016$) than the non-using group. The average expenditure of the using-group was 41.3% lower than non-using group.*
Conclusion: *Using a risk-assessment sheet in health examination statistically and practically increased the compliance of physicians toward health examination guidelines and reduced unnecessary expenditure.*

Keywords: *Risk-assessment sheet, Health examination, Effectiveness*

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Health examination for the general population is a health care service provided by physicians to asymptomatic individuals for finding disease or abnormal health status. Every asymptomatic person is recommended to receive a regular health examination for early detection of serious diseases that can be treated and also for prevention and promotion of interventions to maintain health status and prolong life.[1-5] Health examination can also reduce premature morbidity and mortality, while it preserves function and enhances the quality of life to older adults[6-8].

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There are health examination services in every level of health care, all government hospitals, private hospitals, private clinics and private medical laboratories. Private hospitals provide several health examination programs for different levels of customers as well[9].

Health examination guidelines for asymptomatic individuals is generally accepted. But the existing routine annual checkup in Thailand which emphasized on laboratory investigations following the already-prepared package does not have enough academic evidence to show the benefit in health promotion[10]. Although the Thai Medical Council, Royal College of Medicine and other relevant Royal Colleges have set the committees to construct the

Guide to Periodic Health Examination and Maintenance for Thai People by using an evidence-based method, most physicians still have different attitudes and practices, which generally depend on their background of knowledge and clients need.

Techniques to improve compliance of physicians toward health examination guideline of several countries were studied, such as charts audit among residents who provide health examination services in medical schools[6], peer review among physicians in hospitals[11], computer reminder systems in large medical centers[12,13], fact sheet reminders in patients records[14] or workshop for physicians who provide health examination services[15]. But a study about methods to improve compliance of Thai physicians toward Thailand s guidelines has never been done.

The objective of the present study was to determine the effectiveness of using risk-assessment sheets to improve compliance toward Thailand s health examination service guidelines among physicians who worked for the Department of Family of Medicine, Phramongkutklao Hospital.

Material and Method

One hundred and two asymptomatic adult clients (age more than or equal to 20 years old) who came for health examination service at the Department of Family Medicine, Phramongkutklao Hospital from January to March 2003 were asked to fill in risk-assessment sheets (RA sheet), after informed consent. All clints who had chronic diseases such as dibetes or hypertention and who came for specific purposes such as health examination required for employment or for obtaining driving licenses were not included.

Risk-assessment sheets were created according to Guide to Periodic Health Examination and Maintenance for Thai People . They consisted of 4 parts, the first part was a self-administered questionnaire which asked about clints general information and their health risks. The second part was for physicians to fill in clients essential parameters such as body weight (Wt), height (Ht), body mass index (BMI), visual accuity (VA), clinical breast examination and digital rectal examination. The third part was a check list questionaire and the price of laboratory investigations. The last part was the recommendation for physicians.

The Guide to Periodic Health Examination and Maintenance for Thai People graded the essential of health examination procedures regarding evidence-based medicine into four levels of power of recommendation as shown in Table1. Since evidences to support the benefit for patients in health examination services procedures with power of recommendation levels B and C were not good enough and providing these procedures varied depending on the physicians judgment. Therefore, the present study focused on power of recommendation A and D procedures only .

Health examination data were collected from the clients risk-assessment sheets and were compared with 103 recorded-data collected from the hospital s computer before using the risk-assessment sheet (Data of health examination clients, ICD-10 code Z00.0, during January and February 2001) by using both univariate analysis (means, minimum, maximum and proportion) and bivariate analysis (t-test for difference of means and t-test for different proportions). *P*-value smaller than 0.05 was considered as significant difference.

The present research was approved by medical committee of the institution.

Results

Of the 102 using RA sheet clients and 103 non-using RA sheet clients, the average age of the clients was 47.5 years old and 45.5 years old for using and non-using group respectively. Both groups had

Table 1. Power of recommendation

Code	Meaning
A	There is good evidence to support the recommendation that the condition be specifically considered in a periodic health examination. (Must do)
B	There is fair evidence in addition to the experts suggestion to support the recommendation that the condition be specifically considered in a periodic health examination. (Should do)
C	There is insufficient evidence to recommend for or against the inclusion of the condition in a periodic health examination, but recommendations may be made on other groups. (May or may not do)
D	There is fair or good evidence to support the recommendation that the condition be excluded from consideration in a periodic health examination. (Don't do)

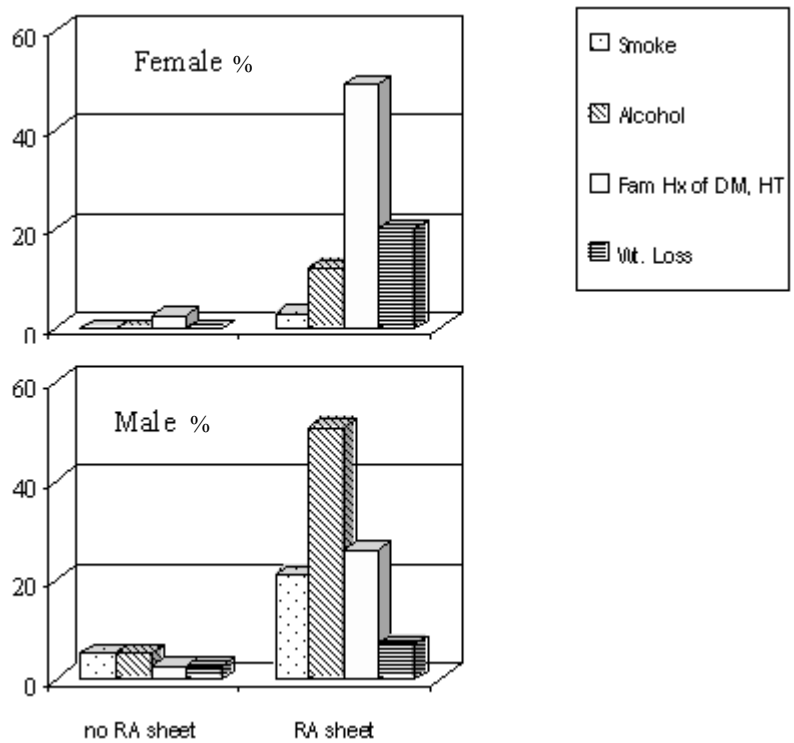

Fig. 1 Percentage of clients with health risk

Table 2. Proportion of clients with other health risks recorded in RA sheet group only

Health risk	Male	Female
No Annual oral health check up	77%	53%
Family history of CAD or CVA	9%	26%
Raw food ingestion	19%	12%
Risk for STD	14%	5%
Chronic cough or hoarseness	16%	14%
Female with a new-born baby with a birth weight > 4,000 gram	-	7%
Family history of CA breast or CA ovary	-	7%

more females than males and there was no statistical significant difference in the average age and proportion of sex between the two groups (p-value = 0.244 and 0.671, respectively).

In male clients, the most common health risks recorded in non-using RA sheet group were smoking (10%) and alcohol consumption (7.5%). After risk-assessment sheets were used, the proportions of male smoking and alcohol consuming were increased to 27% and 51% respectively. In females, the proportions were also raised from no record to 3% for smoking and 12% for alcohol consumption (Fig.1). Other health problems found only in using RA sheet group are shown in Table 2.

Physical examination procedures recommended in the guideline (power of recommendation level A) were body weight, height, blood pressure (BP), visual acuity (VA), and body mass index (BMI). All recommended physical examination procedures were significantly provided more in clients the using RA sheet group than in the non-using group (p-value < 0.01) (Fig. 2).

Regarding the Pap test approximately 37.2% of female clients in using RA sheet group received the test and 47.2% of them were advised to receive it as soon as possible. This proportion was statistically

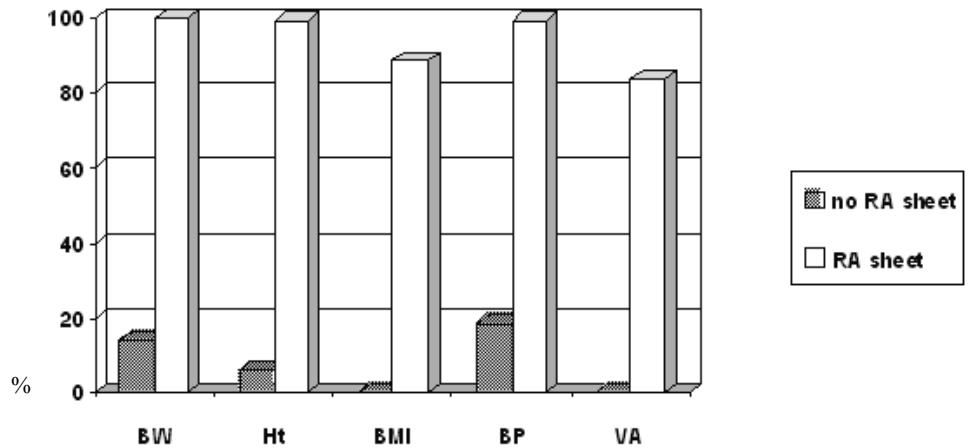

Fig. 2 Percentage of clients who received recommended physical examination

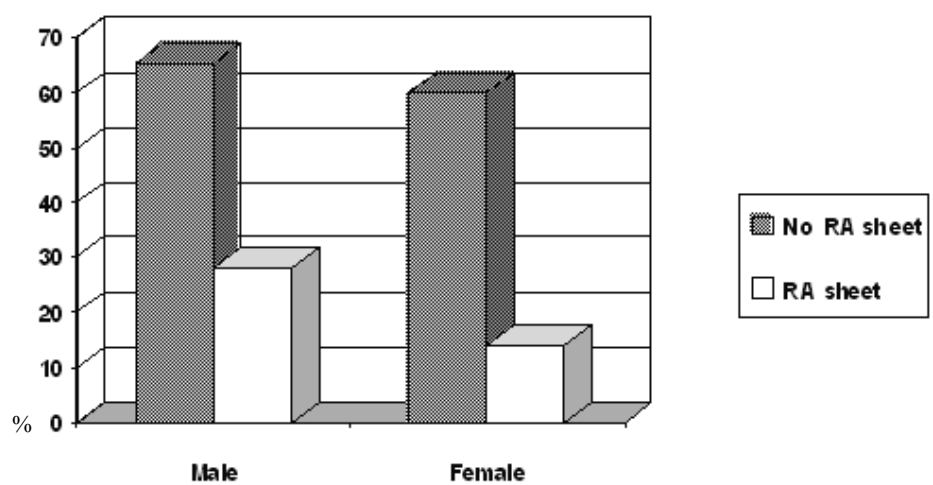

Fig. 3 Percentage of clients received CXR

significant higher than the percentage of female clients in the non-using group who received a Pap test (17%) and were advised to receive the test (3%) (p-value = 0.016).

Non-essential laboratory investigations in health examination for asymptomatic adult were reduced when the RA sheet was used. The proportions of clients who received a chest x-ray (CXR) and tumor marker measurement in the using RA sheet group were statistically significant lower than the non-using group (p-value < 0.01, 0.013 respectively) and average proportion of clients who received tumor markers measurement was reduced from 5.7% to zero. (p-value < 0.013) (Fig. 3 and 4) Other tests such as measuring blood urea nitrogen and uric acid level were decreased in the using RA sheet group as well. Furthermore, the average number of laboratory investigations in the using RA sheet group (6.6 procedures per visit) was statistically significant lower than the non-using group (10.3 procedures per visit) (p-value < 0.01).

The average expenditure in health examination (calculated from the price list of Phramongkutklao Hospital in the year 2003) of clients in the using RA sheet group was 41.3% lower than that of clients in the non-using group (Fig. 5) (p-value < 0.01).

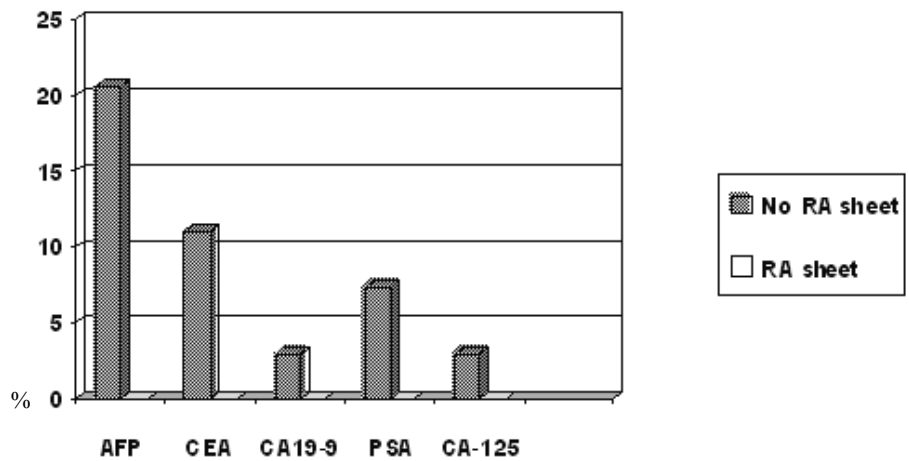

Fig. 4 Percentage of clients received tumor marker level measurement

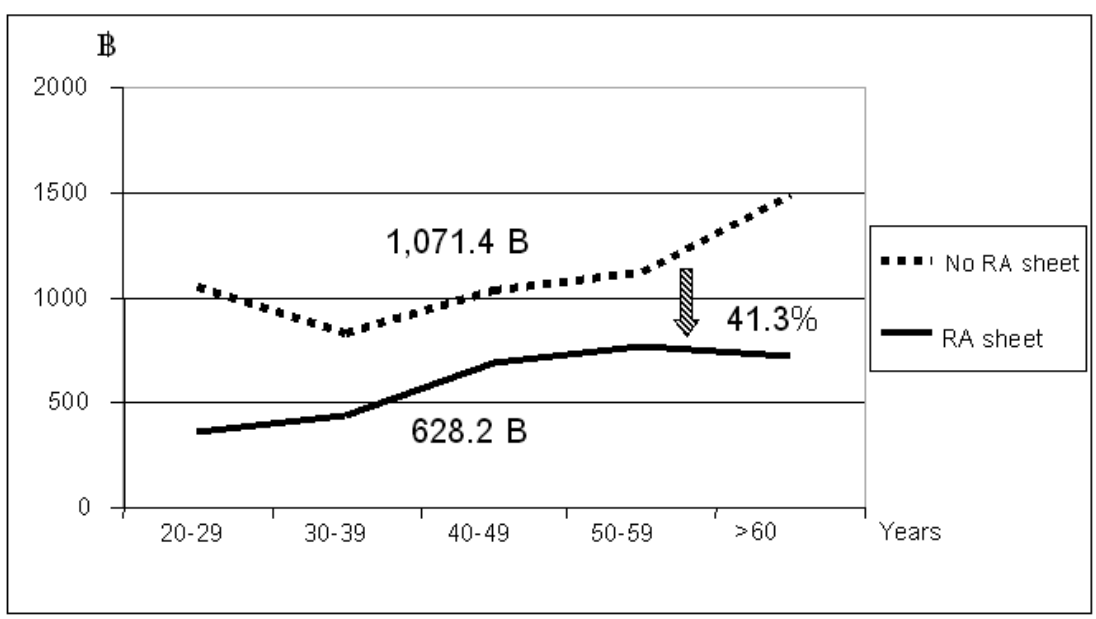

Fig. 5 Average expenditure of health examination

Discussion

The compliance of physicians toward health examination guideline was improved after risk-assessment sheets were used. Health examination is a process to identify health risks. Risk-assessment sheets helped physicians to identify several health risks that they used to overlook. For example, more than 50% of female clients were found to have family history of DM or HT, 3% of them were smokers, more than 50% of male clients were alcohol drinkers and three-fourths of the male clients did not have an annual oral health check. This information might not be detected by conventional health examination service.

Recommended physical examination procedures (Wt, Ht, BP, BMI and VA) were provided to more clients as well. Indeed, well-trained screening nurses

could help physicians in provision of these routine procedures.

There were many laboratory investigations which physicians still provided to their clients despite not having enough evidence to support their benefit , such as CXR and tumor marker in asymptomatic adults. Lack of awareness and familiarity was one of the barriers. Although physicians were aware of the guideline recommendations, they were not familiarized with the specific content or details of the guideline[16-21]. Conclusion of health examination recommendation in RA sheet might act as a reminder for physicians to overcome this problem[22]. The results of the present study indicated the unnecessary CXR and tumor marker screening tests since all clients who received these two procedures had positive results of corresponding diseases such as tuberculosis or cancers.

Pap test, the only cancer screening method which had enough evidence to support the effectiveness in reducing the mortality rate, was provided increasingly when the RA sheet was used. The reason why the rate was not as high as physical examination procedures might be due to the fact that many Thai female clients were not familiar or awkward with this test and it could not be done at the Department of Family Medicine, Phramongkutklao Hospital. The clients had to make another appointment with the gynecological department.

The most important goal of health examination is to prolong life, reduce the morbidity rate and improve the quality of life while the expenditure issue was also concerned. In the present study, the average number and average expenditure of laboratory investigations were significantly decreased by not performing the unnecessary tests for patients without risks, for example CXR, tumor markers and liver function test. However, the rate of providing essential investigations such as fasting plasma glucose, total cholesterol, triglyceride, LDL were not much declined as they were used but more appropriately and rate of providing some other essential procedures such as Pap test, stool exam were even increased.

Many clients did not realize that some of their daily activities were risky for their health, self-administered part in RA sheet helped clients to verify their own health risks. This technique might help physicians during the counseling period as well.

In conclusion, risk-assessment sheet could be used to improve compliance of physicians toward health examination guideline. Clients would receive their health examination appropriately according to their own risks. In addition, the RA sheet could also be used for general patients.

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การเพิ่มประสิทธิผลของการตรวจสุขภาพ โดยใช้แบบประเมินความเสี่ยง

ไกรสร โตทับเที่ยง, อุษา ตันติแพทยางกูร

ความเป็นมา: *ในต่างประเทศมีเทคนิคหลายวิธีในการช่วยแพทย์ให้บริการตรวจสุขภาพประชาชนได้อย่างมีประสิทธิภาพและตรงตามคำแนะนำการตรวจสุขภาพของประเทศนั้นๆ แต่สำหรับในประเทศไทย ยังไม่มีการทำวิจัยในเรื่องดังกล่าว*

วัตถุประสงค์: *เพื่อเพิ่มประสิทธิผลของแพทย์ ในการตรวจสุขภาพผู้มารับบริการให้ตรงตามแนวทางมาตรฐาน "โดยใช้แบบประเมินความเสี่ยงต่อการเกิดโรค"*

วัสดุและวิธีการ : *ผู้วิจัยได้จัดทำ "แบบประเมินความเสี่ยงต่อการเกิดโรค โดยอ้างอิงจากแนวทางการตรวจและการสร้างเสริมสุขภาพสำหรับประชาชนไทย" และให้ผู้ใหญ่ไทยที่ปราศจากอาการผิดปกติที่มารับบริการตรวจสุขภาพที่กองตรวจโรคผู้ป่วยนอก โรงพยาบาลพระมงกุฎเกล้า ตั้งแต่วันที่ 2 มกราคม - 31 มีนาคม พ.ศ. 2546 จำนวน 102 คน กรอกแบบประเมินความเสี่ยงฯ ก่อนเข้าพบแพทย์ เพื่อใช้ประกอบการตรวจสุขภาพ เปรียบเทียบกับการตรวจสุขภาพผู้มารับบริการก่อนการใช้แบบประเมินความเสี่ยงฯ โดยเก็บข้อมูลจากคอมพิวเตอร์ของโรงพยาบาล จำนวน 103 ราย*

ผลการศึกษา: *ผู้มารับบริการที่ใช้แบบประเมินความเสี่ยงฯ ได้รับการตรวจสุขภาพตรงตามมาตรฐานเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติ เมื่อเทียบกับก่อนการใช้แบบประเมินความเสี่ยงฯ ($P<0.01$) ในกลุ่มผู้ใช้แบบประเมินความเสี่ยงมีอัตราการตรวจภาพรังสีทรวงอก, สารบ่งมะเร็ง (tumor marker) และค่าเฉลี่ยของจำนวนการส่งตรวจห้องปฏิบัติการลดลงมาก ($P<0.01$) และในทางตรงข้าม อัตราการตรวจมะเร็งปากมดลูกเพิ่มขึ้นมาก ($P<0.016$) เมื่อเปรียบเทียบกับกลุ่มไม่ใช้แบบประเมินความเสี่ยงอย่างมีนัยสำคัญทางสถิติ ค่าเฉลี่ยของค่าใช้จ่ายในการตรวจทางห้องปฏิบัติการลดลงร้อยละ 41.3 เมื่อมีการใช้แบบประเมินความเสี่ยง*

สรุป: *การใช้ "แบบประเมินความเสี่ยงต่อการเกิดโรค" ช่วยให้แพทย์ตรวจสุขภาพตามแนวทางมาตรฐานเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติ และลดค่าใช้จ่ายที่ไม่จำเป็นลง*