RESEARCH COMMUNICATION

Establishment of an Integrated Management Model for the Secondary Prevention of Cervical Cancer- an Experience in Taiwan Hospital

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Abstract

    In the present study, secondary data analysis was utilized to evaluate the efficiency of the integrated management model (IMM) on the Pap smear test for screening of women's uterine cervical cancer. The data of female patients receiving a Pap smear test were collected both before (from July to December, 2006) and after (from January to June, 2007) introducing the IMM in a regional hospital in Tainan. The result revealed an increment of participation rate from 5.1% to 15.4% (p <0.001) among the female patients in the OPD (out-patient department), although the post-IMM participation rate was still much lower than that of general hospital data in Taiwan. Since IMM has proved efficacious for the management of various diseases, improvement in our IMM for the female uterine cervical cancer's prevention and management is conceivable. Studies on influencing factors should be carried out to allow strategies for resolution of problems to designed, documented and implemented.

Key Words: Integrated management model - Pap smear test - participation rate - case management

Introduction

    National health insurance in Taiwan has brought its citizenry the medical care of a higher quality with a relatively reasonable pricing. However, the system still lacks a built-in financial infrastructure and combinatorial flexibility to minimize resource waste. In another words, the paying public could enjoy a better medical quality and better benefits could be achieved. To address such issues, an integrated management model has been proposed to provide a comprehensive infrastructure of medical care (Schultz, 1995), including prevention, diagnosis, treatment, recovery, referral and other continuous services.

    This model could also helps simplify the administrational overhead, and reduce the waste in time consumption and human resources. Improper insurance expense can be therefore reduced by the facility and the resources sharing. The difference between the conventional medical-care model and the integrated management model (IMM) is that, conventional medical-care model is focused on providing direct medical care to satisfy the personal needs of the patient, while the IMM is designed to balance the resource output and input for universe medical needing in which the care providers of different specialities collaborate to treat the patient in a comprehensive manner to fulfill the overall medical demands from the public on the basis of balanced resources (Lung and Lin, 2005). In another words, the latter emphasizes the importance of prevention, treatment and coordinated nursing care, providing the adequate but inexpensive medical services (Yeh, 2002). The latter model regroups clinical components to integrate functionalities and medical specialties both horizontally and vertically (Lin, Chao, 2002). To establish an integrated system, the mutual trust should be built into the service system to facilitate close collaboration, but based on the currently available medical services in one hospital (Yin et al., 2000).

    The uterus is a critical organ for reproduction in women. Its cervical cancer, the second prevailing and the fifth deadliest cancer for women in Taiwan (Bureau of Health Promotion, Department of Health, 2007), may occur due to dangerous and/or insanitary sexual contacts (Lin, Chen and Liu, 2006). The American Cancer Society has been promoting the Pap smear for cervical cancer screening since 1940, which has been recognized worldwide since 1950 as an effective preventive measure for early diagnosis of cervical cancer (Chen and Chou,

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1995). Samples in Pap smear tests might present false positive and negative results due to detached cells (Chen et al., 2005), and thereafter a cervical biopsy may be needed for confirmation; though, it remains economically efficient, convenient, simple and fast for secondary prevention, and worthy for universally expansion.

National health insurance policy became effective in March, 1995. In July 1995, to embody the concept of preventive medicine, women insurers over 30 were eligible to have a free annual Pap smear every year. If there were negative results for 3 continuous years, the insurer was entitled one free-of-charge Pap smear test every 3 years afterwards (BNHI, 1995). The awareness raised by the effort of Department of Health has increased the test participation rate from 10% in 1993 to 26.4% in 2003 in Taiwan (Lu and Juan, 2003), though being lower than that in Western countries. In the US, the participation rate within 3 years of white females over 18 increased from 74.1% in 1987 to 81.4% in 2000 (CDC, 2004); it is projected that by 2010, 97% of women over 18 will have at least one test during their lifetime and 92% women will have tests done within 3 years (Byrd et al., 2004). In Canada, the test participation rate within one year for women between 18 and 69 also increased from 48.8% in 1995 to 52.7% in 1999; 79% women aged 20-69 took the test within 3 years in 1999 (Ministry of Public Works and Government Services Canada, 2002). Likewise, 85% women in UK also had a Pap smear done (Quinn et al., 1999).

The relative low participation rate of Pap smear test in Taiwan might be due to private unpleasantness in exposure of the vulva for examination (Huang, 1982). In addition, the willingness can be influenced by factors including shamefulness with gynecological manifestations, fears of knowing to have an untreatable cervical cancer, inadequate knowledge about the test, the procedural complexity of the test, the gender of the medical staff, youthfulness, low-grade education, unpleasant experiences and ambiguous readouts (Huang, Yeh and Lin, 1998; Lin et al., 1999; 2003; 2007; Bureau of Health Promotion, Department of Health, 2007).

Numerous reports also pointed out that frequent reminding from medical staff was positively associated with the willingness of women to take a pap smear test (Howe and Bzduch, 1987; Celentano et al., 1989; Mamon et al., 1990), and was very critical for an early diagnosis (Blesch and Prohaska 1991). Pap smear test, indeed, has a great advantage for potential early diagnosis that leads to very early but very efficacious treatment, especially for the premalignant lesions and the carcinoma-in-situ (Huang and Chang, 1998). And, in fact, the Pap smear test remains the most simple, convenient and effective test for diagnosis of cervical cancer than others (Dewar et al., 1992). Besides, the documented data have shown a lower prevalence and mortality of cervical cancer in countries where Pap smear test was widely available (Boyes et al., 1997; Larson et al., 1982).

Moreover, there appears to be a higher cervical cancer prevalence in Taiwan than in most of the Western countries (Bureau of Health Promotion, Department of Health, 2007; Huang, Chang, 1998).

Table 1. The Advantages of the Integrated Management Model(IMM)

Step	Before	After
1. Intensive reminding/ warning system	N/A	1. The IMM marks the patients who match the test criteria and make a note in the appointment record. 2. Rapid reminding is carried out at first-line interview.
2. Information integration system	N/A	To afford a comfortable pap smear test for those needing and agreeing to receive the test.
3. Public awareness system	Poster/ flyer	1. In addition to flyers, daily broadcasts are also performed at specific times in the hospital to raise the awareness. 2. Public education campaigns are held from time to time.
4. Rapid processing window	N/A, or appointments required	Speedy screening service is established in the OB/GYN department to provide a fast test experience by professional medical staff
5. Case management	N/A	The correct report is mailed to the test receiver afterwards. Case management is initiated for patients with abnormal/ ambiguous results. These patients will be informed by their case manager through telephone, providing assistance in follow-up appointment for further exams and treatments.

N/A, not available

Materials and Methods

I. Preparation

During the data collection before carrying out the IMM, it was found that about 88% of patients in the out-patient department (OPD) undergoing chronic disease-related treatments, among whom only 5.08% (1217/23977) had received a pap smear test. There was undoubtedly a need to encourage the willing of the OPD patients to accept such a test, and also there was a need to design the procedure convenient or easy for patients to approach or to request the test.

Patients having taken a pap smear test were mostly from (1) OB/GYN outpatient services, (2) community healthcare services and (3) health insurance-covering clinic services, according to the collected data. To assure an effective prevention of uterine cervical cancer by the pap smear test, an IMM plan designed based on the group discussion of a team consisting of certain physicians, nurses, case workers, integrated management managers and administrators should be conducted.

II. Setup of an integration management model (IMM)

The establishment of the IMM was carried out through in the following steps (Table 1):

1. To set up a warning or triggering point in the first line services system: Physicians, nurses and medical staffs form various departments, contacting the female patients

Table 2. Age-dependent Participation Rate of Pap Smear Test Both Before and After Introducing the IMM

Age	≤19	20~29	30~39	40~49	50~59	≥60	Total
Before	2	42	153	466	362	192	1,217
	(2,016, 0.10)	(2,800, 1.50)	(3,297, 4.64)	(4,375, 10.65)	(4,563, 7.93)	(6,927, 2.77)	(23,977, 5.08)
After	6	258	693	1,225	1,078	598	3,865
	(1,954, 0.31)*	(3,009, 8.56)	(3,535, 19.6)	(4,583, 26.73)	(4,563, 23.61)	(7,097, 8.42)	(25,093, 15.4)
P-value	0.157	<0.001	<0.001	<0.000	<0.001	0.004	<0.001

*(total number of female outpatients, number of patients tested/total female outpatients)

wherever and whenever, should be first instructed to keep in mind to encourage or even to invite the patient actively joining the IMM.

2. To define the female group needing to joint the IMM: Those women enjoying usual sexual life at any age were to be included, and to be persuaded receiving a Pap smear test as could annually, at the first-line services.

3. To establish a rapid and comfortable procedure of Pap smear test by intensive training in the OB/GYN unit.

4. To set up a rapid delivery system to insure the patient receiving a correct report as soon

5. To apply a follow-up biopsy for those women with a positive or an equivocally positive result by the Pap smear test, so that they could receive a complete and perfect chemo-radio-surgical management if needed.

6. To plan a following course of chemo-radio-therapy for the patients as needed.

III. Data collection

Following the demographic information described in the "National Health Insurance-Sponsored Pap Smear Participation Form" (BNHI,1995) , the subjects were divided into 6 age groups (≤19, 20-29, 30-39, 40-49, 50-59 and ≥60 y/o) and also into 6 education groups (none, primary school, junior high school, high school /vocational school, college and graduate schools). Also, according to the status of menopause, pregnancy, hysterectomy and radiotherapy treatment, patients were divided into 2 groups (ie. yes or no), respectively.

Totally, there were 23,977 female patients in the OPD before (the B-group) and 25,093 after inducing the IMM (the A-group) (see Table 2).

IV. Analysis

Secondary data analysis was used to compare the participation rate of the pap smear test in the B-group and A-group. The SPSS 10.0 for Windows was used for the database construction and statistical analysis. In addition to qualitative descriptions, Chi-square test was used to examine the relationship between variables, and the difference between datasets. It is considered significant if P <0.05.

Results

1. Increase in pap smear participation rate (Table 2)

In the B-group, 1,217 took the test with a participation rate of 5.08%, and in the A-group 3,865 took the test with a participation rate of 15.4%; there was a significant increment (317.6%) after inducing the IMM (P<0.000). But, the participation rate was still much lower than the overall participation rate of 26.4% in Taiwan (Lu and Juan,

2003), undoubtedly, there was still a great gap for improvement through further planning, designing and promoting in this hospital.

2. Influence of age on the participation rate (Table 2)

There was a higher participation rate in the age between 30-59 year old both before and after inducing the IMM, that didn't alter the age distribution significantly. The participation rate, however, was much increased after inducing the IMM in the age groups 20 to 29, 30 to 39,40 to 49, , 50 to 59 and ≥60 (p <0.001 for above groups). There was no change in the youngest age group (≤19) .

Discussion

Overall, the establishment of an integrated management can promote the collaboration between medical departments based on their specialties, as well as patients' willingness of taking pap smear test. Through measures like reminders from medical staff, public awareness programs and selective testing (by offering pap smear test to patients who are originally seeking other medical services) and telephone follow-up in case of abnormal results, participation rate increased. The result is consistent with previous documents(Buehler, Parsons, 1997), indicating the application potential in other disease prevention in the hospital.

The hospital being studied in this report still showed a lower pap smear participation rate. This might be due to the fact that patients in this hospital are mainly seeking advice for chronic disease treatment. Also, the execution effectiveness of inter-departmental collaboration is yet to be improved. In order to further increase the participation rate of pap smears, it is proposed that re-training programs, incentive systems and hospital/community collaboration should be established. Public education to raise awareness in family members is also a potentially effective way to motivate pap smear participation.

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