

ED ADMINISTRATION

## Health promotion and disease prevention in the emergency department: a feasibility study

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**ABSTRACT**

**Background:** Health promotion and disease prevention have been increasingly recognized as activities that may be within the scope of emergency medicine. The purpose of this feasibility study was to identify health risks and offer immediate interventions to adult patients who have drug and/or alcohol problems, incomplete immunization, are overdue for a Pap (Papanicolaou) smear, and/or are smokers.

**Methods:** The study took place in a busy tertiary Emergency Department (ED) serving an inner-city population with a significant proportion of patients who are homeless, substance abusers, working poor, and/or recent immigrants. A convenience sample of patients completed a computer-based health-risk survey. Trained health promotion nurses offered appropriate interventions to patients following review and discussion of their self-reported data. Interventions included counseling for problem drinking, substance abuse, and smoking cessation, screening for cervical cancer, and immunization.

**Results:** From October 20, 2000 to June 30, 2003, we enrolled 2366 patients. One thousand and eleven subjects (43%) reported substance abuse and 1095 (46%) were smokers. Of the 158 smokers contacted in follow-up, 19 (12%) had quit, 63 (40%) had reduced the number of cigarettes/day and 76 (48%) reported no change. Of 1248 women surveyed, 307 (25%) were overdue for a Pap smear and 54 (18%) received this intervention. Forty-four percent of subjects were overdue for at least one immunization and of those, 414 (40%) were immunized in the ED.

**Conclusion:** At-risk patients can be identified using a computer-based screening tool, and appropriate interventions can be given to a proportion of these patients in a busy inner city ED without increasing wait time.

**Key words:** disease prevention; health promotion

**RÉSUMÉ**

**Contexte :** La promotion de la santé et la prévention de la maladie sont de plus en plus reconnues comme étant des activités du domaine de la médecine d'urgence. Le but de la présente étude de faisabilité était de déterminer les risques pour la santé et d'offrir des interventions immédiates aux patients adultes qui sont aux prises avec des problèmes de drogue ou d'alcool, dont la vaccination n'est pas à jour, qui n'ont pas subi de test de Papanicolaou depuis longtemps ou qui sont des fumeurs.

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**Méthodes :** L'étude a été menée dans un département d'urgence occupé d'un hôpital de soins tertiaires desservant une population des quartiers centraux de la ville qui compte une forte proportion de sans-abri, de toxicomanes, de travailleurs à faible revenu ou d'immigrants récents. Un échantillon de commodité de patients a rempli un sondage informatisé sur les risques pour la santé. Des infirmières qualifiées en promotion de la santé ont offert les interventions appropriées aux patients à la suite de l'examen et d'une discussion de l'information qu'ils avaient fournie. Les interventions comprenaient le counselling pour les problèmes d'alcool, la consommation de drogues et l'abandon de la cigarette, le dépistage du cancer du col de l'utérus et l'immunisation.

**Résultats :** Du 20 octobre 2000 au 30 juin 2003, 2 366 patients ont été inclus dans l'étude. Mille onze sujets (43 %) ont signalé des problèmes de consommation de drogues et 1 095 (46 %) étaient des fumeurs. Parmi les 158 fumeurs contactés lors du suivi, 19 (12 %) avaient cessé de fumer, 63 (40 %) avaient diminué leur consommation quotidienne de cigarettes et 76 (48 %) n'avaient signalé aucun changement. Parmi les 1 248 femmes ayant répondu au sondage, 307 (25 %) n'avaient pas subi de test de Papanicolaou depuis longtemps et 54 (18 %) reçurent cette intervention. Quarante-quatre pour cent des sujets devaient recevoir au moins une immunisation de mise à jour et parmi ceux-ci, 411 (40 %) furent vaccinés au département d'urgence.

**Conclusion :** Les patients à risque peuvent être ciblés à l'aide d'un outil de dépistage informatisé et un certain nombre d'entre eux peuvent recevoir les interventions appropriées à un département d'urgence occupé des quartiers centraux de la ville sans augmenter le délai d'attente.

## Background

Health promotion is defined as the development of lifestyle habits that healthy individuals and communities can adopt to maintain and enhance a state of wellbeing. It addresses individual responsibility, whereas preventive services can be fulfilled by health providers.<sup>1</sup> Since 1985, the World Health Organization (WHO) has advocated for health promotion.<sup>2</sup> Bensberg and Kennedy's framework for emergency department (ED) health promotion<sup>3</sup> recommends integrating health promotion strategies into the management of disease. Disease prevention is defined as protecting as many people as possible from the harmful consequences of a threat to health.

In September 2000, Alberta Health and Wellness (the provincial government health department) funded a disease prevention/health promotion (DP/HP) project in the ED of the Royal Alexandra Hospital, Edmonton, based on Bensberg and Kennedy's principles.<sup>4</sup> This ED was chosen because it serves a unique population (Table 1)<sup>5</sup> that includes individuals at high risk, has a high patient volume (>80 000 visits/yr), long waits and a dedicated full-time health promotion staff.

Over the last 10 years, Canadians have experienced longer ED wait times,<sup>6</sup> and a reduction in the number of primary care physicians.<sup>7</sup> As EDs are, in many respects, the "safety net" of the health care system, the result of this has been that inner city emergency physicians have increasingly provided primary care.

The literature is equivocal about the benefit of health promotion in the ED,<sup>8-10</sup> with most projects reporting a sin-

gle intervention for prevention. Few studies report the use of a computer based ED screening and health survey.<sup>11</sup> In 1998, the Public Health and Education Task Force of the Society for Academic Emergency Medicine (SAEM) developed recommendations for prevention, counselling and screening activities in the ED. The Task Force concluded that "clinical preventive services have been widely recommended in the primary care setting, but little work has been done to evaluate whether such prevention activities are appropriate in the ED."<sup>12</sup>

We viewed the lengthy ED wait times as an opportunity to assess the health status of the inner city population we serve and to implement DP/HP interventions. A recent systematic review evaluated 17 potential ED DP/HP interventions.<sup>13</sup> We felt the evidence reported for smoking cessation counselling, vaccination inventory, substance abuse (including alcohol)

**Table 1. Comparison of community and regional demographics for the study hospital, the Royal Alexandra Hospital, Edmonton**

| Population subsets      | Community population, %* | Regional average, %* |
|-------------------------|--------------------------|----------------------|
| Single parent families  | 25.0                     | 12.3                 |
| Aboriginal              | 9.9                      | 4.4                  |
| Low-income families     | 26.7                     | 12.3                 |
| <Grade 9 education      | 13.7                     | 4.4                  |
| ED visit rates per 1000 |                          |                      |
| Males                   | 517                      | 401                  |
| Females                 | 506                      | 397                  |

ED = emergency department  
\*Unless otherwise specified.

screening, and possibly Papanicolaou (Pap) smear screening supported offering these activities to our ED patients.

## Purpose and objectives

The purpose of this feasibility study was to determine whether interventions for specific health promotion and disease prevention strategies can be initiated in the ED without negatively affecting patient wait time for care. Our specific objectives were:

1. to identify adult ED patients who were smokers, problem drinkers and/or substance abusers, and provide them with appropriate counseling;
2. to identify the need for immunization and Pap smears, and when indicated, offer these interventions in the ED or in the community; and
3. to evaluate how this project was viewed by emergency physicians.

## Methods

The Health Research Ethics Board of the University of Alberta, Edmonton, approved this study.

### Subjects

Between Oct. 20, 2000, and June 30, 2003, a convenience sample of patients with the following characteristics were deemed eligible and invited to participate.

- Adults 18–60 years of age. After the first year of the study, the age criterion was changed to 15–60 years. This change resulted from the identification of younger adolescents who were self-supporting and living on their own, or who arrived with a parent and were interested in participating.
- Presented to the ED when a research nurse was on duty (daytime hours and evenings).
- Triage as category III, IV or V on the *Canadian ED Triage and Acuity Scale* (CTAS).<sup>14</sup>
- Able to read and speak English, or accompanied by an interpreter.

Patients who were confused, intoxicated or uncooperative were excluded. The research nurses self-scheduled to work, on average, 3 shifts per week (range 2–5), to cover the periods of greatest patient volume.

### Enrollment

Eligible patients were identified by the ED Unit Clerk at

the time of registration and invited to participate. Charts of consenting patients were placed in a special location from which they were sequentially drawn by a research nurse. Not all such patients were enrolled, as ED flow took priority over the study; thus, patients who were moved to an examination room before being approached by a research nurse were excluded.

### Survey completion and interview

We employed a computer survey tool using direct patient data entry. Before completing the survey, the patient was oriented to the study objectives and the computer touch screen surveying technology. The answers to all questions were self-reported and recorded on a “Patient Profile Sheet” in the patient’s chart. At the conclusion of the survey, the research nurse reviewed the patient risk profile and discussed and sought consent for any areas of potential intervention. Each survey process and interview took approximately 40 minutes. Patient consent for any of the offered interventions was noted in the patient chart, and a copy of the patient’s risk profile was sent to his or her family physician.

### Interventions

Initial consultation with an addictions counsellor took place in the ED. However, subsequent consultations by the same counsellor were done on an outpatient basis if the patient was discharged, and provided in-hospital if the patient was admitted. Patients were also given the option of obtaining interventions in the community. Smokers were offered referral to a cessation program or to an inner city primary health care physician. This physician assessed the patient’s eligibility and ability to pay for smoking cessation medication.

### Follow-up

Attempts at telephone follow-up were made at 30, 60 and 90 days following the initial ED visit. A maximum of 3 telephone calls were made to each subject per month. If contact was not made by the 3rd call and a written letter, the subject was considered “lost to follow-up.” Follow-up questions were specific for each health risk (e.g., for smoking cessation: “Have you decreased the amount of consumption, or quit?”).

### Emergency physician feedback

In order to provide feedback on the project, all fulltime emergency physicians ( $n = 42$ ) in the study ED were asked to complete a survey containing questions that focused on their awareness of the project, the usefulness, and immedi-

ate utility of the project, the appropriateness of health promotion and disease prevention activities in the ED setting, the potential benefit for other EDs, and the impact of the project on the views and use of the ED.

### Survey and data

Surveyor™ software (InfoWard Inc., Edmonton) was used for the study. Survey questions<sup>15</sup> and computerized risk assessment guidelines that have been used elsewhere<sup>16-19</sup> and tested for readability, reading level, reliability and comparison to face-to-face interview<sup>20</sup> were included. The survey included more than 300 questions, with branching questions triggered by gender or other factors. For example, the survey included questions based on the CAGE criteria<sup>21</sup> to identify problems with alcohol abuse. All patients identifying substance abuse were automatically guided by the software to questions about their readiness to change (Prochaska's stages of changes<sup>22</sup>). Specific immunization questions were based on the *Canadian Immunization Guidelines* (hepatitis B, tetanus, influenza, pneumococcus and tuberculosis).<sup>23</sup> To verify the immunization status of survey patients, the research nurse accessed the Provincial Health Immunization Database, which was downloaded for this study. The Canadian Task Force on Preventive Health Care guidelines were used to determine the need for a Pap smear.<sup>24</sup>

Survey data were stripped of patient identifiers and uploaded to a secured off-site computer. All text and interview data were filed and stored in the research office and was accessible only to research staff.

## Results

During the study period, an estimated 25 000 patients were invited to participate of whom 6578 (26%) consented to participate. Of those who consented to participate, 2366 (36%) completed the survey and were enrolled. The sample was made up of 47% males and 53% females and had the following age distribution: 1% were 15-17 years; 23% were 18-25 years; 68% were 24-64 years; 8% were aged 65 years or older.

Of the enrolled patients, 1048 (44%) were eligible for immunization; however, 60% of those patients refused it, because of pain, physician preference, fear, or inability to obtain informed consent. Of those agreeing to be immunized, 40% received immunization on the same ED visit (some received more than 1 immunization).

Of the 1248 women surveyed, 307 (25%) were overdue for a Pap smear. In the first year, 86 women (28% of the female sample) were offered a Pap smear in the ED, or were

referred to an appropriate outpatient clinic, family physician or another service of their choice. No female participants chose to have a Pap smear in the ED in the first year of the study. Therefore ED Pap smears were not offered for the 2nd and 3rd years; eligible patients were referred for outpatient management. Of the 307 women overdue for Pap smears, 114 were contacted in follow-up and 54 (47%) reported receiving an outpatient Pap smear. The following reasons were given for not accessing this intervention in the community: procrastination, fear, anxiety, apathy and lack of education regarding benefits of regular screening.

Of the enrolled patients, 1011 (43%) reported substance abuse, distributed as follows: 588 alcohol, 139 street drugs and 284 both alcohol and street drugs. Six hundred and thirty-four subjects with substance abuse (63%) accepted a referral for counselling. The distribution of Prochaska's stages of change categories in these 634 patients were: precontemplation (454; 71%); contemplation (55; 8%); preparation (29; 5%); action (39; 6%); and maintenance (57; 10%). Only 14 of the 634 (2%) patients who were referred for counselling could be contacted for follow up. Of these, 7 had made some progress in addressing their health risk.

With regard to smoking, 796 of enrolled patients were lifetime nonsmokers, 475 were ex-smokers, and 1095 (46%) were smokers. Four hundred and eleven of the smokers (38%) accepted referral to a smoking cessation program.

Of the 158 (14%) smokers contacted in follow-up, the reported quit-smoking rate was 12% (19/158). In addition, 63 patients (40%) reported cutting back on their smoking, totaling 82 patients (51%) reporting altered behaviour following smoking intervention. The following are examples of the reasons given by those who did not quit smoking: "only joy left in life," "only way to deal with stress" and "quitting is too difficult."

Of the surveyed emergency physicians, 14 (33%) completed an email survey on the study, 7 of whom were excluded because they were unaware of the project. Three of the surveyed physicians felt that the project was useful, and 5 felt that DP/HP would be beneficial for other EDs. Six did not feel that the project had an impact on the work they performed in the ED. Increased attention to DP/HP was reported by 3 physicians, and 5 felt that the identification of risk was a good fit with the ED. Four physicians reported that they used the results from the survey in their patient assessments.

## Discussion

The results of this study provide additional evidence that

DP/HP activities are feasible in the ED. The health risks assessed in this project were chosen for their applicability to the target population. The SAEM Task Force suggested that the ED could screen for additional health risks including hypertension, geriatric falls, smoke detector counselling, firearm storage counselling and domestic violence.<sup>12</sup> The number of patients consenting in our study suggests that many ED patients are willing to participate in prevention activities. The demographics of our patient population (frequently including a lack of telephone access and fixed address) provided a challenge for follow-up. Almost half (43%) of the patients in our sample had alcohol and/or substance abuse. The generalizability of this figure is unknown. Health care staff from the community health centres who participated in patient follow-up reported more awareness of the frequency of ED visits by their clients and the medical problems that were consequential to their social issues.<sup>5</sup> Knowledge of the significant issues with substance abuse in this population, along with greater awareness by community health care providers, may allow for a more inclusive approach for managing these complex problems in the community and in the ED.

The presence of an addictions counsellor for immediate intervention in the ED led to a potential unexpected positive outcome for admitted patients. Unsolicited feedback from inpatient medical staff suggested that admitted patients who had received counselling in the ED were more willing to discuss their addiction problems. As a result, our hospital administration added an addictions counsellor to the personnel on the hospital inpatient units.

Our 98% rate of loss to follow-up in the addictions sub-sample highlights the complex nature of addiction and the need for multiple and integrated methods of intervention and follow-up. Of those who agreed to follow-up, 454 (71%) were in Prochaska's precontemplation stage, suggesting that they were not ready for change and may not have chosen to participate in addictions counselling.

Forty percent of deficient vaccinations were provided by the research nurse without affecting ED flow while patients waited to see the emergency physician. The proportion of patients eligible for vaccination dropped from 56% in Year-1 of the study to 32% in Year-3. We suspect that this was in part due to the reduction in enrollment age and an aggressive vaccination campaign by the regional Health Authority.

It is conceivable that a significant proportion, if not all, of the women who received community Pap smears, would

not have had received this in a timely manner outside the study. Of note, 4 of the 54 women who had a Pap smear in the community following their ED visit had significant pathology requiring further intervention.

This study demonstrates that the use of a computer-based survey tool to assess patients' risk during ED waiting time is feasible. Only 128/2523 patients (5%) were unable to complete the survey before being called away by clinical staff. To maximize enrolment when using a computer-based survey tool, a location that provides patient confidentiality is required, ideally with capacity for more than one patient at a time. If more survey stations had been available, many more consenting patients would have been able to complete the survey.

Finally, the emergency physicians surveyed reported that DP/HP screening and interventions using a nurse that was additional to standard ED staffing did not interfere with their work. A previous pilot study suggested ED staff do not support injury prevention counselling in the ED.<sup>25</sup> In contrast, our respondents felt the project was important and a good fit for the ED. However, the staff indicated that the prevention project did little to alter their own behaviour in considering prevention issues in their practice. This finding is consistent with previous reports.<sup>22</sup>

### **Limitations**

This study has limitations that should be considered. Only 36% of those who consented to participate were enrolled, predominately due to limited availability of research nurses and computers. The availability of research nurses also resulted in patients being interviewed primarily on days and evening shifts rather than nights or weekends, which may have underestimated the degree of addiction problems in our population. Very few patients in the addiction and smoking samples were contacted in follow-up, reflecting the transient nature of the target population, lack of telephone access and the complexity of addictions. Finally, reporting bias may have resulted from the very low proportion of the surveyed emergency physicians who responded and were aware of the study.

### **Conclusion and future directions**

This study demonstrated the willingness of ED patients to participate in health promotion and disease prevention projects, and the feasibility of carrying out study projects in a busy inner city ED. Our results provide a unique perspective of the health status of an inner city ED patient population, and may be helpful to better target areas for program

implementation. In the future we intend to examine the association and interaction of health risks, evaluate the interventions used in this study and further evaluate the values and beliefs of the ED staff regarding their role in health promotion and disease prevention.

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