

# Needle Stick Injuries During Medical Training Among Thai Pre-Clinical Year Medical Students of the Faculty of Medicine, Chulalongkorn University

VIROJ WIWANITKIT, M.D.\*

## Abstract

**Objective** : To study episodes of needle stick injuries during medical training among pre-clinical year medical students of the Faculty of Medicine, Chulalongkorn University.

**Setting** : Faculty of Medicine, Chulalongkorn University.

**Design** : Retrospective descriptive study.

**Subjects** : 375 pre-clinical year medical students of the Faculty of Medicine, Chulalongkorn University during academic year 1998 - 1999.

**Method** : Questionnaire survey and interviewing.

**Results** : In this study only 5 students revealed that they had ever had accidental exposure during venipuncture training. Each episode of exposure was different in the details. Most of the accidents occurred after venipuncture practice (80%).

**Conclusion** : Although the universal precautions are taught in many subjects, we also found that accidental exposures still occur. Not only prevention of accidents but also post-exposure management should be frequently reiterated to the medical students at every level. Any medical practice of students should be under supervisor control.

**Key word** : Accidental Exposure, Pre-Clinical Year Medical Students, Post-Exposure, Management

WIWANITKIT V

J Med Assoc Thai 2001; 84: 120-124

Venipuncture is an important medical procedure that graduate doctors must know and practice correctly. In Thailand, pre-clinical year medical students are required to study this procedure. But these days, any exposure to a patient's blood or other body fluids can result in the trans-

mission of a number of pathogens. To deal with medical specimens, one must follow the universal precautions(1,2).

There have been many studies concerning accidental exposure during medical practice and service among many types of medical workers in

\* Department of Laboratory Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.

Thailand(3-7). Under the principle that pre-clinical year medical study is the basis of clinical-year and resident-year medical study. If the problems of these medical students are understood, the students can be guided in a safe direction in medical practice. Needle stick injury seems to be common type of accidental exposure of medical students. With the concept that accidents can occur at any time even with the best prevention, the detail of each episode of accidental exposure in medical student is still an important topic.

From review of the literature, there is no report about needle stick injury episodes of pre-clinical year medical students in Thailand. Therefore, the author studied the situation about accidental exposure, especially post-exposure aspect during medical training among pre-clinical year medical students.

## MATERIAL AND METHOD

The population in this study was all 375 pre-clinical year medical students of the Faculty of Medicine, Chulalongkorn University who were trained in the venipuncture training course during the 1998 and 1999 academic year.

All subjects were asked if they had ever had a needle stick injury during practice. Whenever students reported accidental exposures and did not mind discussion, they were interviewed for the details of those accidents. Descriptive statistical analysis was carried out on the data when appropriate.

## RESULTS

From a total of 375 medical students (211 male, 164 female), only 5 medical students (4 male and 1 female) replied that they had had needle stick injuries during the training course. None reported more than one accidental exposure. Interviews revealed that all of them had needle stick injuries while practicing with real patients. After the exposures, all of the medical students reported the episode, but not all within the proper time after exposure. However, after counseling, only 3 students accepted the antiretroviral drug. Concerning the serology of the patients, the author found that one of the five was Anti-HIV seropositive and the others had unknown serology. It revealed that only 3 from 5 students had serology follow-up, all had Anti-HIV seronegative results at 0, 3 and 6 months. The details for each accidental

exposure (Table 1) and post-exposure management (Table 2) of each case were different.

## DISCUSSION

Compared to other studies among clinical-year medical students in Thailand, the accidental exposure rate among the pre-clinical year medical students in this study was significantly lower ( $P < 0.005$ ) though this group of students had less experience in medical practice. This might be expected since there are not as many medical procedures that pre-clinical year medical students must practice compared to clinical-year medical students. This may be because equipment for the pre-clinical year medical students is already prepared when they practice the medical procedure. Staffs are required to check this point. In some cases of accidental exposure in this study, the students practiced by themselves without supervision.

Although universal precaution is widely discussed and taught to the medical students in Thailand, accidental exposures still exist. Therefore, no matter how well they are taught about prevention, accidents still occur. Thus, the steps after accidents are as important as the prevention. Perhaps this point is one of the pitfalls in teaching universal precautions. Considering the students who had an accidental exposure in this study, though all of them cleaned the wound and reported the event, some of them reported in improper time. In comparison to the reporting rate among Thai clinical-year medical student in previous studies<sup>(3,4)</sup> (Table 3), the reporting rate in pre-clinical year medical students in this study is higher. Why is this so? Perhaps because the older reporting system was difficult and time-consuming. Or it may be that when more experience is gained, more basic principles will be violated.

From this study the exposure rate among male students was not significantly higher than for female students ( $P > 0.2$ ). Therefore, any medical student can get accidental exposure if they are not careful. Most of the students got the accidents after they performed venipuncture especially management of used needles. From the study of Jagger G et al<sup>(8)</sup>, the most common cause of needle stick injury among medical personnel is recapping the needle. Therefore, the topics about waste and used needle management

**Table 1.** Detail for each accidental exposure.

Case	Sex	Age	Under supervisor	Cause of accident	Serology of patient
1	Male	18	No	Disposed needle	Unknown
2	Male	18	No	Recapped needle	Anti-HIV +ve
3	Female	23	Yes	Practice procedure	Unknown
4	Male	18	Yes	Recapped needle	Unknown
5	Male	18	Yes	Forgot to cap needle	Unknown

**Table 2.** Post exposure management of each case.

Case	Report in	Primary wound care	Counseling	Antiretroviral drug	Serology follow-up
1	2 days	Yes	Yes	Yes	Yes
2	3 days	Yes	Yes	Yes	Yes
3	1 day	Yes	Yes	Yes	No
4	1 day	Yes	Yes	No	Yes
5	1 day	Yes	Yes	No	No

**Table 3.** Detail of studies about accidental exposure among medical students in Thailand(3,4).

Studies	University	Level of student	Accidental rate (%)	Reporting rate (%)
1. Vithayasai P et al(4)	Chiang Mai	Clinical	96.8	59.5
2. Hiransuthikul N et al(3)	Chulalongkorn	Clinical	90.9	28.6
3. Wiwanitkit V	Chulalongkorn	Pre-clinical	0.01	100

should be emphasized to the students. All necessary equipment should be well prepared before practicing medical procedures. Universal precaution should not be violated in all situations.

This study was a retrospective study so there might be some problems of information bias from memory. Therefore, further study designed as a prospective study is recommended.

## SUMMARY

Accidental exposure is a totally unwanted event. To reduce the rate of such exposures in

medical students universal precaution teaching is still necessary and should be taught at every level of medical study. There should be concern not only for topics related to prevention of accidental exposure but also topics about post-exposure management and reporting. In medical training, students should be trained under close supervision. Not only prevention of accidents but also post-exposure management should be taught. Accidental exposure among all groups of medical workers can be reduced, if practice follows the principle "safety comes first."

## REFERENCES

1. Reyes EM, Legg JJ. Prevention of HIV transmission. *Prim Care* 1997; 24: 469-77.
2. Gerberding JL. Management of occupational exposures to blood-borne viruses. *New Eng J Med* 1995; 323: 444-51.
3. Hiransuthikul N, Chiravitsit M, Plianpairoj C. Accidental exposure and KAP surveys concerning the universal precaution among the clinical-year medical students of Faculty of Medicine, Chulalongkorn University. *Chula Med J* 1997; 41: 717-32.
4. Vithayasai P, Laxanarug A, Plainetara W, Jarujinda CH. Accidental exposures of medical students, Chiang Mai University. *Thai AIDS J* 1993; 5: 44-7.
5. Wisithirath P. Health belief model and prevention of nurse in Trat Hospital. *Region 7 Med J* 1995; 14: 273-83.
6. Danchaivijitr S, Tantiwatanapaiboon Y, Chokloikaew T, Sutthissanon L, Chitreechuer L. Universal Precaution: knowledge, compliance, attitude of doctors and nurses in Thailand. *J Med Assoc Thai* 1995; 78: 112-7.
7. Sabaijit J, Vedchadhamma J. Opinion and practice of anesthetic nurse in prevention of HIV/AIDS patients nursing care at Vachira Phuket Hospital. *J Pharmaceu Organ* 1996; 22: 19-29.
8. Jagger J, Hunt E, Brand-Elnagger J, Pearson RD. The risk of occupational human immunodeficiency virus in a university hospital. *N Eng J Med* 1988; 319: 284-8.

## อุบัติเหตุจากการเรียนปฏิบัติงานทางการแพทย์ในนิสิตแพทย์ไทยชั้นก่อนคลินิก คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

วีโรจน์ ไวยานิชกิจ, พ.บ.\*

**วัตถุประสงค์ :** เพื่อศึกษาการเกิดอุบัติเหตุจากการเรียนปฏิบัติงานทางการแพทย์ในนิสิตแพทย์ชั้นก่อนคลินิก คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

**สถานที่ทำการศึกษา :** ภาควิชาเวชศาสตร์ชั้นสูตร คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

**รูปแบบการศึกษา :** การศึกษาเชิงพรรณนา ชนิดย้อนหลัง

**ประชากรที่ศึกษา :** นิสิตแพทย์ชั้นก่อนคลินิก คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัยในปีการศึกษา 2541-2542 จำนวน 375 คน

**วิธีการศึกษา :** การสำรวจโดยใช้แบบสอบถามและการสัมภาษณ์

**ผลการศึกษา :** พบร่วมนิสิตเพียง 0.01% ที่เกิดอุบัติเหตุจากการฝึกหัดเจ้าเลือดในช่วงเวลาที่ทำการศึกษาในชั้นก่อนคลินิก พบร่วมรายละเอียดของการเกิดอุบัติเหตุแต่ละครั้งมีความแตกต่างกัน หันน้ำบวมที่ส่วนใหญ่ของนิสิตเกิดช่วงหลังจากการเจาะเลือด (80%)

**บทสรุป :** การให้ความรู้แก่นิสิตแพทย์ในทุกระดับชั้นให้เก็บความลับคัญและเข้าใจถึงการบังอันและการปฏิบัติตนหลังจากการเกิดอุบัติเหตุเป็นสิ่งที่สำคัญ นอกเหนือจากการฝึกปฏิบัติงานทุกครั้งควรอยู่ภายใต้การควบคุมดูแลของผู้เชี่ยวชาญเสมอ

**คำสำคัญ :** การเกิดอุบัติเหตุ, นิสิตแพทย์ชั้นก่อนคลินิก, การปฏิบัติตนหลังเกิดอุบัติเหตุ

วีโรจน์ ไวยานิชกิจ

ฯดหมายเหตุทางแพทย์ ๔ 2544; 84: 120-124

\* ภาควิชาเวชศาสตร์ชั้นสูตร, คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย, กรุงเทพฯ 10330