# Implementation of Antibiotic Use Guidelines for Fresh Traumatic Wound at Siriraj Hospital

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***Objective:*** *To determine the effectiveness of implementing a clinical practice guideline (CPG) on antibiotic use for adults with fresh traumatic wounds who attended the trauma center at Siriraj Hospital, Bangkok.*
***Material and Method:*** *A prospective study of 600 adult patients who had fresh traumatic wounds (≤6 hours) was conducted at Siriraj Trauma Center from March 2013 to March 2014. The CPG was introduced to physicians, nurses and medical students by posting the CPG at the patient care areas of the trauma center. The outcomes were an appropriate classification of wounds according to the CPG recommendations, prevalence of antibiotic prescribing, incidence of wound infection and compliance with the CPG.*
***Results:*** *Clean-contaminated wounds that did not need antibiotic treatment and clean-contaminated and contaminated wounds that required antibiotics were observed in 63.2, 6.7, and 30.1% of the patients, respectively. Antibiotics were given to 512 patients (85.3%). Infections occurred in six patients (1.0%). Antibiotic prescription according to CPG recommendations was observed for 243 patients (40.5%). The prevalence of antibiotic use in the CPG-compliant group (65.8%) was significantly less than that in the CPG-noncompliant group (98.6%) ($p<0.001$). The patients in the CPG-compliant group had more contaminated wounds than those in the CPG-noncompliant group (51.4 vs. 15.7%, $p<0.001$). The incidences of wound infection were very low in both groups and not significantly different (1.2 vs. 0.8%, $p = 0.690$).*
***Conclusion:*** *Antibiotic prophylaxis was necessary in less than 36.8% of adults with fresh traumatic wounds who attended Siriraj Trauma Center. Compliance to CPG implementation using simple intervention seemed to be low. Adhering to CPG recommendations for antibiotic prophylaxis in adults with fresh traumatic wounds can reduce the unnecessary prescribing of antibiotics without increasing the rate of wound infection.*

***Keywords:*** *Clinical practice guideline, Implementation, Antibiotic prophylaxis, Traumatic wound*

***J Med Assoc Thai 2015; 98 (3): 245-52***
***Full text. e-Journal:*** *http://www.jmatonline.com*

Fresh traumatic wound is defined as a wound resulting from traumatic injury that receives medical care at a health care facility within 6 hours of the incident. Superimposed bacterial infection is an important complication of traumatic wound that can lead to serious illness, long-term disability, and death. Therefore, appropriate wound management is important in minimizing the probability of wound infection[1]. The incidence of wound infection in patients with fresh traumatic wounds is low, ranging from 1.1 to 12%, and only some high-risk patients should require antibiotic prophylaxis[2]. The existing meta-analyses and a recent small randomized controlled trial on the value of routine use of antibiotic prophylaxis for simple traumatic wounds revealed that most of these patients did not receive significant clinical benefit from antibiotic prophylaxis[2-4]. The use of prophylactic antibiotics to treat traumatic wounds is a common practice in many hospitals, even though the routine use of prophylactic antibiotics is not recommended in several current practice guidelines[1,5,6]. Antibiotic use should be individualized based on the degree of bacterial contamination, the presence of infection-potentiating factors, the mechanism of injury, and the presence or absence of the host's predisposition to infection[5]. The benefit of antibiotic prophylaxis should outweigh the harm of using it. Such harm includes, but is not limited to, development of antibiotic resistance, adverse effects, allergies, and related costs[6].

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Fresh traumatic wound is one of the most common health problems in patients attending the trauma center at Siriraj Hospital in Bangkok, Thailand. The previous study conducted at Siriraj Trauma Center observed that more than 90% of adults with fresh traumatic wounds received prophylactic antibiotics, whereas the prevalence of potential pathogenic bacteria at the wound sites was less than 10%, the rate of wound infection was only 1.2%, and all patients with infectious complications had contaminated wounds and also received antibiotic prophylaxis[7]. These results implied that antibiotic prophylaxis was overused in patients with fresh traumatic wounds and that at least 50% of such patients did not require antibiotic prophylaxis according to the recommendations for antibiotic prophylaxis in fresh traumatic wounds from Thailand's Antibiotics Smart Use Project[8]. The clinical practice guideline (CPG) on the rational use of antibiotics for adults with fresh traumatic wounds, as shown in Fig. 1, was developed based on the findings of our previous study[7].

The objective of the present study was to determine the effectiveness of implementing CPG on antibiotic use for adults with fresh traumatic wounds who attended Siriraj Trauma Center, in terms of an appropriate classification of wounds according to the CPG recommendations, prevalence of antibiotic prescription, incidence of wound infection, and compliance with the CPG.

## Material and Method

This prospective study was approved by the Institutional Review Board of the Faculty of Medicine, Siriraj Hospital. It was conducted at the trauma center in Siriraj Hospital, a 2,300-bed tertiary care university hospital in Bangkok, Thailand, from March 2013 to March 2014. The study included patients aged 18 years or older who had fresh traumatic wounds, all of whom

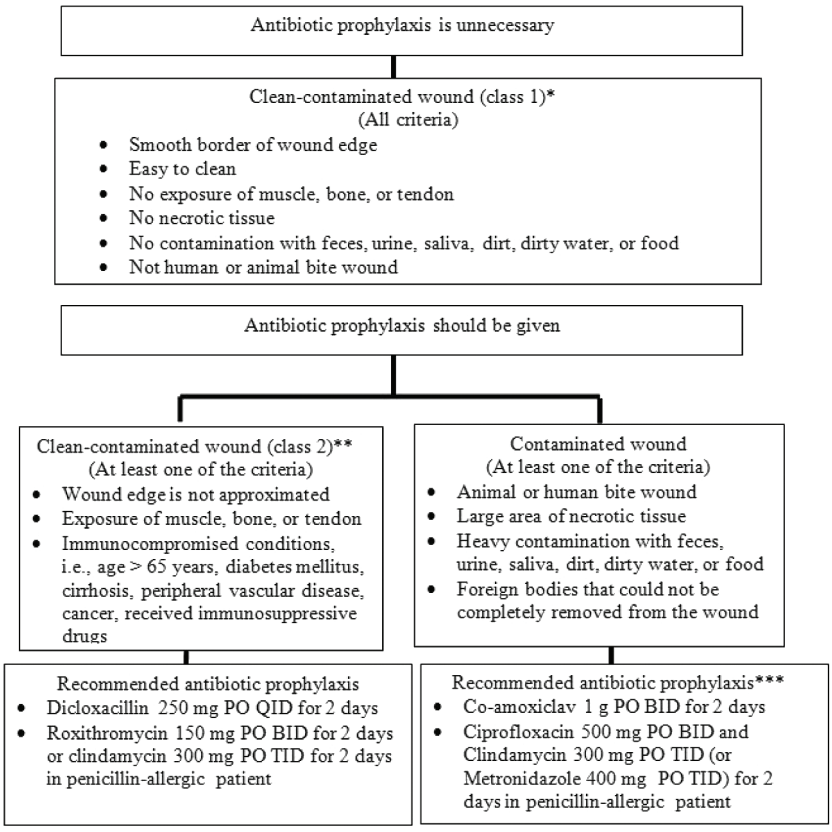


**Fig. 1** Antibiotic use guideline for adults with fresh traumatic wound (i.e. wound that occurs within 6 hours prior to receiving care at hospital). * Clean-contaminated wound that does not need antibiotic prophylaxis. ** Clean-contaminated wound that should receive antibiotic prophylaxis. *** Duration of antibiotic could be extended to 3-5 days in bite wound or wound with heavy contamination.

signed an informed consent form for participation in the study. The prepared CPG as shown in Fig. 1 was a one-page poster written in the Thai language. The CPG emphasizes the importance of classifying wounds as a clean-contaminated wound (class 1), clean-contaminated wound (class 2), or a contaminated wound. The criteria for classifying wound types are shown in Fig. 1. Clean-contaminated wounds (class 1) do not need antibiotic prophylaxis, whereas clean-contaminated wounds (class 2) and contaminated wounds should receive prophylactic antibiotic treatment. The CPG also provides the recommended antibiotic regimens for each type of wound that needs such treatment. The CPG was posted at the physician examination tables and the walls of the patient care areas in the trauma center. All patients received the usual care according to the judgment of their responsible physicians. The relevant data were collected from the patients and their medical records including demographics, underlying conditions, type of injury, location of wound, type of wound, presence of wound contamination, wound care, vaccination, and prescribed antibiotics. Wound classification and compliance to the CPG were determined by the investigators using the data in the case record forms and the patients' medical records. The participating patient was contacted either by telephone on day 3 and day 7 after receiving cares, or by direct contact at the follow-up visit scheduled to determine whether the patient had developed wound infection. Wound infection was diagnosed based on symptoms and signs of infection, i.e. increasing pain, erythema, local warmth, swelling, and/or presence of purulent discharge from the wound. The patients with infected wounds received regular care at Siriraj Trauma Center.

It was estimated that the prevalence of infectious complication of fresh traumatic wounds was 1.2±0.9%. Therefore, a sample size of 563 patients would be needed for a 5% type I error (two-sided) to be accepted; 600 patients were thus enrolled to compensate for 10% loss to follow-up. The data were analyzed by descriptive statistics, unpaired Student t-test or Mann-Whitney U-test, and Chi-square test or Fisher's exact test, as appropriate. All statistical tests were considered significant at $p \leq 0.05$.

## Results

Of the 600 participating patients, 59.3% were males with a mean age of 40.3 years (SD 17.5 years, range 18-93 years), and 72.7% had no underlying diseases. Eighty-five percent of the patients did not receive antibiotics within the 3 months prior to sustaining the wounds. The average time from injury to attending Siriraj Trauma Center was 67.8 minuites (SD 69.8 minuites, range 3-360 minuites). The mean length of wounds was 2.73 cm (SD 3.81 cm, range 0.1-65 cm). Seventy-four percent of the patients did not receive wound dressing before visiting Siriraj Trauma Center. The locations of the wounds are shown in Table 1. Most of the wounds were located on the face, leg, hand, and arm. The types of wounds are shown in Table 2. Laceration wound was the most common type, followed by abrasion and bite wound. The presence of wound contamination was observed in 52.5% of the patients, as shown in Table 3. The data on wound management and

**Table 1.** Locations of the wounds in 600 patients

| Location | n (%) |
|---|---|
| Scalp | 46 (7.7) |
| Face | 144 (24.0) |
| Hand | 131 (21.8) |
| Arm | 74 (12.3) |
| Leg | 141 (23.5) |
| Foot | 14 (2.3) |
| Oral mucosa | 26 (4.3) |
| Others | 24 (4.0) |

**Table 2.** Types of wounds in 600 patients

| Type of wound | n (%) |
|---|---|
| Abrasion wound | 145 (24.2) |
| Laceration wound | 330 (55.0) |
| Incision wound | 4 (0.7) |
| Penetration wound | 14 (2.3) |
| Bite wound | 88 (14.7) |
| Crush wound | 1 (0.2) |
| Burn | 5 (0.8) |
| Others | 13 (2.2) |

**Table 3.** Wound contaminations in 600 patients

| Wound contamination | n (%) |
|---|---|
| None | 285 (47.5) |
| Soil | 139 (23.2) |
| Dirty water | 7 (1.2) |
| Clean water | 6 (1.0) |
| Feces, urine, and other secretions | 146 (24.3) |
| Others | 17 (2.8) |

vaccination are summarized in Table 4. Two hundred and ninety-six patients received wound sutures. Most of the patients received dry dressings. Tetanus and/or rabies vaccinations were given to 69.0% of the patients. Five hundred and twelve patients (85.3%) received prophylactic oral antibiotics whereby dicloxacillin was the most common drug, followed by co-amoxiclav, as shown in Table 5. The average duration of prescribed antibiotics was 2.9 days (SD 1.5 days, range 1-8 days). According to wound classification, most patients (63.2%) had a clean-contaminated wound (class 1), with contaminated and clean-contaminated wounds (class 2) being found in 30.1 and 6.7%, respectively. Antibiotic prescriptions according to wound classifications are shown in Table 6. Wound infection occurred in six patients (1.0%, 95% confidence interval 0.5-2.2%), four instances of which were found in contaminated wounds and two in clean-contaminated wounds (class 1). The incidence of infection was significantly different between the patients who received and did not receive antibiotic prophylaxis: 0.6% (three of 512 patients) vs. 3.4% (three of 88 patients), $p = 0.04$. However, two episodes of infection occurred in the patients with contaminated wounds who did not receive prophylactic antibiotics. Incidence of infection was 0.5% in clean-contaminated wounds (class 1), 2.2% in contaminated wounds, and zero in clean-contaminated wounds (class 2). The clinical features, antibiotic prophylaxis, wound care, clinical course, and treatment outcomes of the six patients with infections in the wounds are summarized in Table 7. All wound infections were successfully treated with appropriate wound care.

Two hundred and forty-three patients (40.5%) received wound management according to the CPG recommendations (CPG-compliant group) and 357 patients (59.5%) were not managed according to the CPG recommendations (CPG-noncompliant group). The comparison of clinical data and outcomes of both groups are shown in Table 8. The patients in the CPG-compliant group had more contaminated wounds than those in the CPG-noncompliant group (51.4 vs. 15.7%, $p<0.001$). The rate of antibiotic prescribing in the CPG-compliant group was significantly less than that in the CPG-noncompliant group (65.8 vs. 98.6%, $p<0.001$). The incidence of wound infections was very low in both groups and was not significantly different (1.2 vs. 0.8%, $p = 0.690$). Eighty percent of the patients in the CPG-noncompliant group received unnecessary antibiotics, 13.2% being attributable to inappropriate duration of antibiotics.

**Table 4.** Wound management and vaccination in 600 patients

| | n (%) |
|---|---|
| Wound dressing | |
| Dry dressing | 495 (82.5) |
| Wet dressing | 105 (17.5) |
| Vaccination | |
| No vaccination | 186 (31.0) |
| Tetanus vaccine | 265 (44.2) |
| Rabies vaccine | 34 (5.7) |
| Tetanus and rabies vaccines | 111 (18.5) |
| Unknown | 4 (0.7) |

**Table 5.** Types of antibiotic prophylaxis regimens in 600 patients

| Antibiotics | n (%) |
|---|---|
| No antibiotic | 88 (14.7) |
| Antibiotic | 512 (85.3) |
| Dicloxacillin | 292 (48.7) |
| Co-amoxiclav | 194 (32.3) |
| Clindamycin | 19 (3.2) |
| Macrolides | 2 (0.3) |
| Cephalosporins | 2 (0.3) |
| Others | 3 (0.5) |

**Table 6.** Type of wound and prescription of antibiotics

| Wound classification | n | Prescribe antibiotic | |
|---|---|---|---|
| | | Yes | No |
| Clean-contaminated wound (class 1)* | 379 | 296 (78.1%) | 83 (21.9%) |
| Clean-contaminated wound (class 2)** | 40 | 40 (100%) | 0 |
| Contaminated wound | 181 | 176 (97.2%) | 5 (2.8%) |

* Wound that meets criteria in Fig. 1 and does not need antibiotic prophylaxis

** Wound that meets criteria in Fig. 1 and should receive antibiotic prophylaxis

## Discussion

The appropriate target rate of antibiotic prescription in adults with fresh traumatic wounds depends on the prevalence of clean-contaminated wounds (class 2) and contaminated wounds according to our recommendations in the CPG created from the data of our previous study[7]. Accordingly, the appropriate target of antibiotic prescription rate in adults with fresh traumatic wounds at Siriraj Hospital should not be more than 37%, since the prevalence of clean-contaminated wounds and contaminated wounds

**Table 7.** Clinical features, antibiotic use, wound care, clinical courses, and treatment outcomes of patients with infections in wounds

| | Gender/ age (years) | Type of wound/ location | Wound classification | Antibiotic prophylaxis prescribing | Suture | Dressing | Follow CPG | Antibiotic treatment | Outcome after treatment |
|---|---|---|---|---|---|---|---|---|---|
| 1 | F/27 | Laceration wound/ oral mucosa | Contaminated wound | No | Yes | Dry | No | Co-amoxiclav | Cure |
| 2 | M/71 | Bite/arm | Contaminated wound | Yes/ co-amoxiclav | No | Dry | Yes | Co-amoxiclav | Cure |
| 3 | M/20 | Laceration wound/ leg | Clean-contaminated wound (class 1)* | Yes/ dicloxacillin | Yes | Wet | No | Dicloxacillin | Cure |
| 4 | M/51 | Bite/leg | Contaminated wound | No | No | Dry | No | Co-amoxiclav | Cure |
| 5 | M/28 | Laceration wound/ face | Clean-contaminated wound (class 1)* | No | Yes | Dry | Yes | Co-amoxiclav | Cure |
| 6 | F/72 | Bite/leg | Contaminated wound | Yes/ co-amoxiclav | No | Wet | Yes | Co-amoxiclav | Cure |

CPG = clinical practice guideline; M = male; F = female
* Wound that meets criteria in Fig. 1 and does not need antibiotic prophylaxis

(class 2) observed in the present study was 36.8%, and some of the patients with such wounds, especially clean-contaminated wound (class 2), might not develop infection if antibiotics were not given. The overall incidence of superinfection of the wounds of 1.0% observed in the present study confirmed our previous finding that the chance of infection in adults with fresh traumatic wounds at Siriraj Hospital was very low. Of the six patients who developed wound infections, two had contaminated wounds that were eligible for antibiotic prophylaxis, but neither of these patients received antibiotics. This may explain why the incidence of infection in the patients who did not receive antibiotic prophylaxis (3.4%) was significantly more than that in those who received antibiotics (0.6%).

The overall rate of antibiotic prescription in the present study still remained high, at 85.3%, despite the fact that the appropriate use of antibiotic prophylaxis in this clinical setting should not be more than 37%. This discrepancy arose because only 40.5% of the patients received wound management according to the CPG recommendations. There were three main reasons for poor adherence to the CPG and the high rate of antibiotic prophylaxis in the study results, the first being inappropriate methodology for CPG implementation. The present study used a simple intervention of disseminating CPG by posting the CPG in the patient care areas. Experiences from several studies have shown that no single intervention is likely to be highly effective in implementing behavioral change. A systematic review on interventions to improve antibiotic-prescribing practices in ambulatory care concluded that multifaceted interventions were needed to change the behavior of clinicians with regard to prescribing antibiotics[9]. Therefore, a multifaceted interventional approach, including dissemination of CPG for antibiotic use in adults with fresh traumatic wounds in conjunction with educational activities and audit and feedback strategies, is to be attempted at Siriraj Trauma Center. The second reason was a fear of superinfection in low-risk patients who had clean-contaminated wounds (class 1) among the responsible physicians who were aware of the CPG. Many patients who had clean-contaminated wounds (class 1) were misclassified as having clean-contaminated wounds (class 2), to enable prescription of antibiotics. However, most of these patients received antibiotics for only 2 days, as recommended in the CPG. The duration of antibiotic prophylaxis in clean-contaminated wounds (class 1 and class 2) observed in this study (2 days) was shorter than the more conventional duration of 5-7 days observed in the previous study[7]. The third reason was that many responsible physicians were unaware of the CPG recommendations. Antibiotics were given to 78.1% of the patients with clean-contaminated wounds (class 1) despite the CPG recommending that antibiotics should not be given to patients with this class of wound. Conversely, of five patients with contaminated wounds, who did not receive antibiotics, two developed superinfections. Many patients who had clean-contaminated wounds (class 1) were also misclassified as having clean-contaminated wounds (class 2).

**Table 8.** Clinical characteristics and outcomes of the study patients who received (CPG-compliant group) and did not receive (CPG-noncompliant group) care according to the CPG recommendations

| Characteristics of study patients | CPG-compliant group (n = 243) | CPG-noncompliant group (n = 357) | *p*-value |
|---|---|---|---|
| Male | 137 (56.4%) | 219 (61.3%) | 0.237 |
| Age (years) | | | 0.004 |
| Mean ± SD | 42.8±18.8 | 38.6±16.5 | |
| Median (min, max) | 40.0 (18, 93) | 36.0 (18, 87) | |
| Comorbidity | 83 (34.2%) | 81 (22.7%) | 0.003 |
| Diabetes mellitus | 16 (6.6%) | 13 (3.6%) | 0.121 |
| Hypertension | 33 (13.6%) | 35 (9.8%) | 0.189 |
| Chronic kidney disease | 1 (0.4%) | 1 (0.3%) | 1.00 |
| Cirrhosis | 1 (0.4%) | 2 (0.6%) | 1.00 |
| Malignancy | 3 (1.2%) | 0 (0.0%) | 0.066 |
| Prior use antibiotic within 3 months | 37 (15.2%) | 56 (15.7%) | 0.909 |
| Duration from accident to receiving care (minutes) | | | 0.017 |
| Mean ± SD | 76.0±75.7 | 62.1±65.1 | |
| Median (min, max) | 50.0 (5, 360) | 35.0 (3, 360) | |
| Mean ± SD of wound size (cm) | 2.8±3.5 | 2.7±4.0 | 0.752 |
| Location of wounds | | | |
| Scalp | 10 (4.1%) | 36 (10.1%) | 0.008 |
| Face | 41 (16.9%) | 103 (28.9%) | <0.001 |
| Oral mucosa | 13 (5.3%) | 13 (3.6%) | 0.316 |
| Hand | 50 (20.6%) | 81 (22.7%) | 0.548 |
| Arm | 41 (16.9%) | 33 (9.2%) | 0.008 |
| Leg | 76 (31.3%) | 65 (18.2%) | <0.001 |
| Foot | 8 (3.3%) | 6 (1.7%) | 0.271 |
| Type of wound and wound care | | | |
| Laceration wound | 79 (32.5%) | 251 (70.3%) | <0.001 |
| Abrasion wound | 82 (33.7%) | 63 (17.6%) | <0.001 |
| Bite wound | 66 (27.2%) | 22 (6.2%) | <0.001 |
| Penetration wound | 5 (2.1%) | 9 (2.5%) | 0.789 |
| Wound contamination | 160 (65.8%) | 155 (43.4%) | <0.001 |
| Wound classification | | | |
| Clean-contaminated wound (class 1)* | 84 (34.6%) | 295 (82.6%) | 0.034 |
| Clean-contaminated wound (class 2)** | 34 (14.0%) | 6 (1.7%) | <0.001 |
| Contaminated wound | 125 (51.4%) | 56 (15.7%) | <0.001 |
| Wound care prior to visiting trauma center | 78 (32.1%) | 81 (22.7%) | 0.011 |
| Wound suturing | 66 (27.2%) | 230 (64.4%) | <0.001 |
| Dry dressing | 193 (79.4%) | 302 (84.6%) | 0.125 |
| Vaccination | 164 (67.5%) | 250 (70.0%) | 0.530 |
| Antibiotic prescribing | 160 (65.8%) | 352 (98.6%) | <0.001 |
| Duration of antibiotics (days), median (min, max) | 5.0 (2, 5) | 2.0 (2, 8) | <0.001 |
| Duration of antibiotics for clean-contaminated wound (class 1)* | NA | 2.0 (2, 5) | NA |
| Duration of antibiotics for clean-contaminated wound (class 2)** | 2.0 (2, 2) | 4.0 (3, 8) | <0.001 |
| Duration of antibiotics for contaminated wound | 5.0 (3, 5) | 2.0 (2, 7) | <0.001 |
| Infectious complication | 3 (1.2%) | 3 (0.8%) | 0.690 |

CPG = clinical practice guideline; NA = not applicable

* Wound that meets criteria in Fig. 1 and does not need antibiotic prophylaxis

** Wound that meets criteria in Fig. 1 and should receive antibiotic prophylaxis

Although the prevalence of antibiotic prophylaxis in the CPG-compliant group was significantly less than that in the CPG-noncompliant group, the prevalence of antibiotic prophylaxis in the CPG-compliant group was still high, up to 65.8%, even though the appropriate target rate of antibiotic prescription in this clinical setting should be less than 37%, as mentioned earlier. This may have occurred because in comparison with patients in the CPG-noncompliant group, those in the CPG-compliant group had more compromised conditions, greater severity of wounds, and higher prevalence of clean-contaminated wounds (class 2) and contaminated wounds that required antibiotic prophylaxis. However, the incidence of wound infection in the CPG-compliant group was still very low and was not significantly different from that in the CPG-noncompliant group. This finding indicated that using the CPG for the management of fresh traumatic wounds in adults was effective, safe, and facilitated rational use of antibiotics. It is noteworthy that the duration of antibiotic use in the CPG-compliant group was significantly longer than that in the CPG-noncompliant group because most of the patients in the CPG-compliant group had contaminated wounds for which the recommended duration of prophylactic antibiotics was 3-5 days; therefore, these patients usually received antibiotic prophylaxis for 5 days. However, the median duration of antibiotic prophylaxis after implementation of the CPG was significantly shorter than that before CPG implementation (i.e., 2 days vs. 5 days)[7].

## Conclusion

The incidence of wound infection in fresh traumatic wounds in adults was very low. Adhering to the CPG for appropriate antibiotic prophylaxis for adults with fresh traumatic wounds can reduce unnecessary prescribing of antibiotics without increasing the wound infection rate. Compliance to CPG implemented using a simple intervention seemed to be low. Rational use of antibiotic prophylaxis for fresh traumatic wounds in adults should be encouraged by multifaceted interventions, and the rate of antibiotic prescription for adults with fresh traumatic wounds should be less than 37%.

## What is already known on this topic?

Contamination rate of fresh traumatic wounds with potential pathogenic bacteria is very low but antibiotic prophylaxis is still commonly given in fresh traumatic wounds.

## What this study adds?

Prescription of antibiotics according to clinical practice guidelines for antibiotic prophylaxis in fresh traumatic wounds can decrease inappropriate use of antibiotics.


## Acknowledgement

This study was supported by the Health Systems Research and Development Project, Faculty of Medicine, Siriraj Hospital, and the Health Systems Research Institute (Thailand). The authors thank personnel at Siriraj Trauma Center for their cooperation.


## Potential conflicts of interest

None.

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## *การนำแนวทางการให้ยาปฏิชีวนะเพื่อป้องกันการติดเชื้อของบาดแผลสดจากอุบัติเหตุไปใช้ที่โรงพยาบาลศิริราช*

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***วัตถุประสงค์:*** *เพื่อทราบประสิทธิผลของการนำแนวทางการให้ยาปฏิชีวนะเพื่อป้องกันการติดเชื้อของบาดแผลสดจากอุบัติเหตุในผู้ป่วยผู้ใหญ่ที่มารับการรักษาที่ศูนย์อุบัติเหตุ โรงพยาบาลศิริราช*

***วัสดุและวิธีการ:*** *ศึกษาผู้ป่วยผู้ใหญ่ 600 ราย ที่มีแผลสดจากอุบัติเหตุ (บาดแผลที่เกิดภายใน 6 ชั่วโมง) และมารับการรักษาที่ศูนย์อุบัติเหตุ โรงพยาบาลศิริราช ระยะเวลาศึกษาตั้งแต่เดือนมีนาคม พ.ศ. 2556 ถึง มีนาคม พ.ศ. 2557 คณะผู้นิพนธ์ได้แนะนำแนวทางการให้ยาปฏิชีวนะแก่บุคลากรการแพทย์ที่ศูนย์อุบัติเหตุโดยเสนอแนวทางการให้ยาปฏิชีวนะเพื่อป้องกันการติดเชื้อของบาดแผลสดจากอุบัติเหตุไว้ในบริเวณที่ผู้เกี่ยวข้องดูแลผู้ป่วยในศูนย์อุบัติเหตุ ผลลัพธ์ของการศึกษาได้แก่ การคัดแยกชนิดแผลตามแนวทางการให้ยาปฏิชีวนะ ความชุกของการให้ยาปฏิชีวนะเพื่อป้องกันการติดเชื้อ อุบัติการณ์การติดเชื้อที่บาดแผล และอัตราการปฏิบัติตามแนวทางการให้ยาปฏิชีวนะในบาดแผลสด*

***ผลการศึกษา:*** *แผลปนเปื้อนที่ไม่ควรให้ยาปฏิชีวนะร้อยละ 63.2 แผลปนเปื้อนที่ควรให้ยาปฏิชีวนะร้อยละ 6.7 และแผลสกปรกที่ต้องให้ยาปฏิชีวนะร้อยละ 30.1 ของผู้ป่วย มีการให้ยาปฏิชีวนะเพื่อป้องกันการติดเชื้อในผู้ป่วย 512 ราย (ร้อยละ 85.3) อุบัติการณ์การติดเชื้อที่แผลพบเพียงร้อยละ 1.0 ของผู้ป่วยทั้งหมด ผู้ป่วยจำนวน 243 ราย (ร้อยละ 40.5) ได้รับการดูแลรักษาตามแนวทางการให้ยาปฏิชีวนะ ความชุกของการให้ยาปฏิชีวนะเพื่อป้องกันการติดเชื้อในกลุ่มที่ปฏิบัติตามแนวทางการให้ยาปฏิชีวนะและไม่ปฏิบัติตามแนวทางการให้ยาปฏิชีวนะ คือ ร้อยละ 65.8 และร้อยละ 98.6 ตามลำดับ ($p<0.001$) ผู้ป่วยกลุ่มที่ปฏิบัติตามแนวทางการให้ยาปฏิชีวนะมีการปนเปื้อนของแผลมากกว่ากลุ่มที่ไม่ปฏิบัติตามแนวทางการให้ยาปฏิชีวนะ (ร้อยละ 51.4 และร้อยละ 15.7, $p<0.001$) อุบัติการณ์ของการติดเชื้อที่แผลต่ำมากและไม่แตกต่างกันอย่างมีนัยสำคัญในผู้ป่วยทั้งสองกลุ่มดังกล่าว (ร้อยละ 1.2 และร้อยละ 0.8 ตามลำดับ, $p = 0.690$)*

***สรุป:*** *อัตราการให้ยาปฏิชีวนะที่เหมาะสมเพื่อป้องกันการติดเชื้อที่บาดแผลสดจากอุบัติเหตุของผู้ป่วยที่มารับการรักษาที่โรงพยาบาลศิริราชควรน้อยกว่าร้อยละ 36.8 การปฏิบัติตามแนวทางการให้ยาปฏิชีวนะที่เสนอมีน้อย การปฏิบัติตามแนวทางการให้ยาปฏิชีวนะเพื่อป้องกันการติดเชื้อของบาดแผลสดจากอุบัติเหตุที่ใช้ในการศึกษานี้สามารถลดอัตราการให้ยาปฏิชีวนะโดยไม่จำเป็นได้โดยไม่เพิ่มอัตราการติดเชื้อที่แผล*