Number of Blood Cultures per 1,000 Patient Days at University-Affiliated Hospitals in Korea

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The authors calculated the number of blood cultures per 1,000 admitted patient days at seven university-affiliated hospitals in 2010, which ranged from 65 to 129 (mean 110). The number of blood cultures per 1,000 patient days could possibly be a good parameter for assessing the appropriateness of blood culture. **(Korean J Clin Microbiol 2012;15:67-69)**

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Blood culture is the gold standard primary test to evaluate patients with sepsis. The need for use of blood culture is increasing, because the incidence of sepsis is rising [1,2]. Several guidelines for optimal blood culture have been proposed including timing and volume of blood collection, number of cultures obtained for each patient, and thoroughness of skin disinfection before collection [3,4]. However, the optimal number of blood cultures per year has not been well documented. Blood culture should be requested adequately, neither overused nor underused [5]. In the Cumitech 1C [4], released in 2005, the number of blood cultures per 1,000 patient days was recommended to be 103-188 in the USA. As the patient population, disease incidence, proportion of acute illnesses, and medical insurance systems in the USA are different from those in Korea, we cannot apply this data directly. The numbers suggested by this documentation need to be evaluated before to be applied to our country. The authors tried to calculate the blood culture numbers per 1,000 patient days, which to our knowledge has not previously been conducted in Korea. The absolute number of blood cultures performed per year could be difficult to compare among hospitals, because the proportion of acute illnesses, hospital size, and turnover rate will be different at each hospital.

Using 1,000 patient days could be the denominator to compensate for these variables. The authors compared the number of blood cultures by 1,000 patient days for seven university-affiliated hospitals in 2010. The average stay in the hospital ranged from 6.9 to 11.3 days.

The mean number of blood cultures per 1,000 days was 110 ± 23 (SD), ranging from 65 to 129 (Table 1). Interestingly, one hospital showed a very low number, 65, whereas all other hospitals reported more than 100. In the detailed analysis of blood culture request patterns, this hospital had a much higher proportion (44%) of cases in which only one set of blood cultures was ordered for adults [6]. The 95% confidence intervals (CI) of the number of blood cultures per 1,000 patient days were 95 to 125, which is slightly higher than the data (73-110) from 18 other university-affiliated hospitals in the previous year (data obtained by the authors, but not published). Patients' constitution, disease severity, underlying illness, location of the hospital, and numbers of intensive care units may affect the results. Accordingly, the numbers of blood cultures per 1,000 patient days in this study should not be applied to small hospitals or long-term care facilities. The number (103-188) of blood cultures per 1,000 patient days suggested by Cumitec 1C [5] was higher than ours. The difference between two studies might be secondary to the proportion of patients with acute illnesses or blood culture ordering pattern. Many hospitals had used two sets (about 70%) for adult patient and one set (about 80%) for child

Table 1. Statistics of yearly requested blood culture at 7 university-affiliated hospitals in 2010

	Hospitals							
	A	B	C	D	E	F	G	Total
Blood culture performed (A)	76,062	70,763	45,925	35,404	29,940	22,649	16,372	297,115
Admitted patient numbers (B)	75,477	97,040	39,161	35,843	24,151	32,618	28,605	332,895
Average admission days (C)	7.8	6.9	8.8	8.37	11.3	9.7	8.8	7.9
Total admitted patient days (B×C)	588,718	669,571	334,619	299,985	269,823	219,695	251,726	2,634,137
Adjusted blood culture by 1,000 patient days* (1,000×A/B×C)	129.2	105.7	137.2	118.0	111.0	103.1	65.0	109.9

*Mean, SD, and 95% confidence intervals are 110, 23, and 95-125, respectively.

patient in blood culture instead of three sets in the hospitals participated in this study [6].

In conclusion, the mean number of blood cultures per 1,000 patient days was 110 at seven university-affiliated hospitals. The number of blood cultures per 1,000 patient days could be a good parameter to evaluate overuse or underuse of blood culture, but could be affected by blood culture requesting pattern.

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=국문초록=

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