tory tract infections cautioning against their misuse.[3] Linezolid may become subject to similar misuse by physicians who prescribe it for the treatment of undiagnosed infections, as has been reported.[4] This observation is consistent with our own at a tertiary care hospital in India. In the recent guidelines on pneumonia from India, we have called for restrictions on the use of linezolid.[5] It is desirable that future guidelines on respiratory and other infections advise against its use early in the course of an infection.

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TO THE EDITOR: Lee et al. report that 82% of the patients with XDR tuberculosis who were treated with linezolid had drug-related toxicity. This prompted the authors to ask for careful drug monitoring by means of conventional blood analysis. Can we do more? Preliminary evidence[1-4] has suggested the potential relation between the pharmacokinetics of linezolid and its tolerability, providing the rationale for targeting linezolid dosage on the basis of its plasma concentrations — that is, therapeutic drug monitoring. Further study is warranted to determine whether therapeutic drug monitoring can serve as a predictive tool to improve the safety of patients requiring long-term therapy with linezolid.

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Human *Borrelia miyamotoi* Infection in the United States

TO THE EDITOR: *Borrelia miyamotoi*, a spirochete that is genetically related to the species of borrelia that cause relapsing fever, has been detected in all tick species that are vectors of Lyme disease.[1,2] It was detected in *Ixodes scapularis* ticks from Connecticut in 2001 and subsequently has been detected in all areas of the United States where Lyme disease is endemic. The first human cases of *B. miyamotoi* infection were reported in Russia in 2011.[3] We now provide evidence of *B. miyamotoi* infection and the prevalence of this infection among people in the United States.

Enzyme-linked immunosorbent assays and confirmatory Western blot assays of archived serum samples obtained from three groups of patients who were living in areas where Lyme disease was endemic between 1990 and 2010 were used to detect antibody against *B. miyamotoi* GlpQ protein (an antigen that is nonreactive to *B. burgdorferi* antibody).[4] Group 1 consisted of 584 patients who participated in serologic surveys for tickborne infections on Block Island and Prudence Island, Rhode Island, and Brimfield, Massachusetts. Patients in the serologic survey were healthy at the time of blood sampling and were enrolled during the spring and autumn of each year. Group 2 included 277 patients from southern New England who were evaluated for

Table 1. Serologic and Clinical Characteristics of *Borrelia miyamotoi* Infection in Study Patients.*

Group, Patient No., and Serum Phase†	Assay Method			Coinfection‡	No. of Symptoms
	ELISA	Western Blot			
		IgM	*IgG*		
Group 1					
Patient 1	Positive at 1:320 dilution	Positive	Positive	None	None
Patient 2	Positive at 1:320 dilution	Positive	Negative	None	None
Patient 3	Positive at 1:320 dilution	Positive	Positive	None	None
Patient 4	Positive at ≥1:320 dilution§	Not done	Positive	None	None
Patient 5	Positive at ≥1:320 dilution§	Not done	Positive	None	None
Patient 6	Positive at 1:320 dilution	Positive	Positive	None	None
Group 2					
Patient 7	Positive at ≥1:320 dilution§	Not done	Positive	None	5
Patient 8	Positive at 1:320 dilution	Negative	Positive	None	9
Patient 9	Positive at 1:320 dilution	Negative	Positive	None	8
Patient 10	Positive at ≥1:320 dilution§	Not done	Positive	None	6
Patient 11	Positive at ≥1:320 dilution§	Not done	Positive	None	3
Patient 12	Positive at 1:1280 dilution	Negative	Positive	Lyme disease	4
Patient 13	Positive at 1:320 dilution	Negative	Positive	Lyme disease	Uncertain
Patient 14	Positive at 1:320 dilution	Positive	Positive	Lyme disease	Uncertain
Patient 15					
Acute	Negative at 1:160 dilution	Negative	Negative	Babesiosis	12
Convalescent	Positive at 1:1280 dilution	Positive	Positive		
Group 3					
Patient 16	Positive at 1:1280 dilution	Positive	Positive	None	5
Patient 17					
Acute	Negative at 1:80 dilution	Positive	Negative	None	10
Convalescent	Positive at 1:320 dilution	Positive	Positive		
Patient 18					
Acute	Negative at 1:80 dilution	Positive	Positive	Lyme disease	12
Convalescent	Positive at 1:320 dilution	Negative	Positive		

* ELISA denotes enzyme-linked immunosorbent assay.
† See the text for the definition of the various groups.
‡ The diagnosis of Lyme disease was based on a typical erythema migrans skin lesion in Patients 12, 13, 14, and 18. Patients 8 and 16 had an atypical erythema migrans skin lesion (<5 cm in diameter).
§ Tests to determine the presence of antibody in serum dilutions greater than 1:320 were not performed.

suspected Lyme disease. Group 3 consisted of 14 patients from southern New York who were evaluated at a Lyme disease clinic with a viral-like illness in the late spring or summer; these patients did not have symptoms or signs suggestive of an upper respiratory tract infection or gastroenteritis.

The seroprevalence was 1.0% in group 1, 3.2% in group 2, and 21.0% in group 3 ($P<0.001$ for comparisons among the three groups). In one patient in group 2 and two patients in group 3, the antibody titer was at least four times as high in the convalescent serum samples as in the acute serum samples; these findings suggest that these patients were recently infected with *B. miyamotoi* (Table 1). All symptomatic patients presented with a viral-like illness and were treated with doxycycline or amoxicillin. Unlike

the patient with well-documented *B. miyamotoi* infection described by Gagliotta et al.[5] elsewhere in this issue of the *Journal*, none of the three patients with evidence of recent *B. miyamotoi* infection in our study were immunocompromised. One patient had *B. miyamotoi* seroconversion and no erythema migrans skin lesion or laboratory evidence of human granulocytic anaplasmosis coinfection (Patient 17). This patient had a temperature of 39.4°C, chills, sweats, a headache, neck stiffness, fatigue, myalgias, arthralgias, abdominal pain, a cough, a sore throat, and right inguinal lymphadenopathy. He was treated successfully with 14 days of doxycycline. The identification of *B. miyamotoi* antibody in 18 of our study patients, including seroconversion associated with symptoms in 3 patients, suggests that *B. miyamotoi* infection may be prevalent in areas where Lyme disease is endemic in the United States.

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Checklists for Invasive Procedures

TO THE EDITOR: In recent years, the World Health Organization (WHO) has undertaken a number of global and regional initiatives to improve the safety of surgical care. Its 2008 Safe Surgery Saves Lives campaign introduced the concept of a checklist, which was intended to identify and control risk during each of the three phases of an operation: before induction of anesthesia ("sign-in"), before incision of the skin ("time-out"), and before the patient leaves the operating room ("sign-out"). It has been well received by the spectrum of health care professionals in the operating room[1] and has been shown to reduce mortality and morbidity.[2]

However, the concept has faltered in moving beyond the operating room, despite the rapidly expanding list of invasive procedures now taking place in nonsurgical, interventional specialties. The same sign-in, time-out, and sign-out phases are eminently applicable to procedures performed in the endoscopy suite, the cardiac catheter laboratory, and interventional radiology rooms. These patients are deserving of the same safety considerations that are being afforded to those undergoing an operation; the essential objectives listed by the WHO include appropriate consent, appropriate personnel and equipment, correct procedural site, avoidance of known al-