associated with this new analgesic formulation and its application. At a minimum, the cumulative experience to date underscores the need for standardized protocols for the preparation and use of morphine nerve paste and for systematic monitoring of patients who receive it.

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Implementation of a Practical Antibiotic Policy in the Czech Republic

To the Editor:

We read with great interest the article by Kolár and Látal reporting the implementation of an antibiotic policy at Olomouc Faculty Hospital in the Czech Republic.[1] We agree with them that an antibiotic policy should be based on the responsible administration of antibiotics and regular monitoring of bacterial resistance. However, we want to express our concerns about the effectiveness of their policy in the urology and the neonatology department, and for the whole hospital.

In the urology department, the authors reported a 14.5% decrease in ofloxacin resistance in *Pseudomonas aeruginosa* between 1995 and 1996 following enforcement of the antibiotic policy by strict control of ofloxacin prescriptions. However, this decrease must be viewed in light of the concomitant increase in ceftazidime resistance (from 2% to 6%) and, more concerning, the emergence of meropenem resistance (from 0% to 8%) observed during the same period. Unfortunately, the level of significance of these variations is impossible to measure, since the number of *P aeruginosa* isolates tested for antimicrobial susceptibility in 1996 was not mentioned. Another problem is that data were not reported on antimicrobial use in the urology department. If, like these authors, we agree that "the selective pressure of antibiotics and their excessive use combine to constitute the driving force behind bacterial resistance," then we would like to know if restriction of fluoroquinolones did not lead to an increase in the use of other antimicrobials, possibly third-generation cephalosporins and carbapenems, resulting in an increase in resistance to these antimicrobials.

In the neonatology department, the authors reported the control of an outbreak of extended-spectrum β-lactamase–producing bacterial infections by restriction of the administration of third-generation cephalosporins. As an alternative, the Antibiotic Center recommended the use of piperacillin, combinations of β-lactam and β-lactamase inhibitor, and aminoglycosides, which were mainly found in the list of controlled antimicrobials. Unfortunately, data on antimicrobial use in this department and data on the evolution of antimicrobial resistance in other microorganisms were not reported.

It seems like the experiences of these two departments do not represent examples of the effectiveness of the antibiotic policy, but only examples of what can be achieved by the antibiotic-control program when specific restrictions are used in addition to the policy. Moreover, it is likely that these interventions only resulted in cycling from one class of antimicrobials to another class without reducing global antimicrobial pressure in these units and that this cycling was performed within the group of controlled drugs.

As mentioned by Kolár and Látal, resistance continued to occur in Olomouc Faculty Hospital despite control efforts. During 1995 and 1996, for the whole hospital, ceftazidime resistance among *P aeruginosa* isolates increased from 6% to 12% ($P<.0000001$). Among other gram-negative bacteria, ceftazidime resistance increased from 12% to 23% in *Acinetobacter baumannii* isolates ($P=.0002$), from 17% to 31% in *Enterobacter cloacae* isolates ($P<.02$), and from 4% to 29% for *Klebsiella pneumoniae* isolates ($P<.0000001$), the latter probably being related to the outbreak observed in the neonatology depart-

ment. With the exception of gentamicin resistance in *K pneumoniae*, there was a decrease or a stability in the percentage of these gram-negative isolates that were resistant to aminoglycosides during the same period. Unfortunately, data on fluoroquinolone and carbapenem resistance were reported only for the urology department and not for the whole hospital. As mentioned earlier, it is also unfortunate that antimicrobial-use data were reported only for 1996 and were not stratified by units, which makes it difficult to make hypotheses on the origin of the variations in the percentages of resistance. Ceftazidime use was low in 1996; however, as stated by the authors, third-generation cephalosporins were among the most frequently used antimicrobials in the hospital. Although gentamicin was part of the group of controlled antibiotics, it was the second most commonly used controlled drug in 1996. Imipenem represented only a small fraction of controlled antimicrobials used in 1996; however, we do not know if there was an increase in imipenem use between 1995 and 1996.

The effectiveness of the antibiotic policy presented by Kolár and Látal should be questioned, since it looks like it did not control antimicrobial resistance when used alone, even with the requirement of approval from the Antibiotic Center for controlled drugs. A clear reduction in the percentage or control of resistance was achieved only when specific and localized restrictions were used in addition to the antibiotic policy. One reason for this might be that the microbial ecology of their hospital necessitates the use of broad-spectrum antimicrobials and if (for example) a restriction is placed on fluoroquinolones, other antimicrobials, such as third-generation cephalosporins and carbapenems, are still needed for the empirical treatment of suspected infections. In other words, to maintain provision of adequate patient care, the Antibiotic Center has no other choice than to approve the use of these drugs even if they are controlled. As a result, the antibiotic policy may only work as cycling of antimicrobials,[2] thus leading to a decrease in resistance to the drugs that are effectively controlled, while resistance to other drugs is maintained or continues to increase. Unfortunately, data on the use of noncontrolled antimicrobials in 1995 and 1996 were not provided, and it is impossible to verify that controlled

antimicrobials were actually replaced by noncontrolled ones after implementation of the policy, or if the policy only resulted in cycling among controlled antimicrobials. Clearly, the effectiveness of this antibiotic policy is difficult to evaluate.

Antimicrobial resistance is commonly less prevalent in Northern Europe than in Central and Southern Europe.[3] In Denmark, the level of resistance in hospital and community microorganisms is particularly low.[4] Amoxicillin-clavulanate, fluoroquinolones, or cephalosporins (all generations) only represented 0.1%, 3.7%, and 7.9% of country-wide hospital antimicrobial use in Denmark in 1998, respectively. In 1998, penicillins without β-lactamase inhibitors (Anatomical Therapeutic Chemical groups J01CA, J01CE, and J01CF) still represented 59% of Danish hospital use, approximately 95% of this being penicillin G, penicillin V, ampicillin, pivampicillin, amoxicillin, or dicloxacillin.[5] Unfortunately, this approach may not be applicable in countries where resistance is already installed in the community or in hospitals that have major problems with nosocomial infections due to resistant microorganisms. Rather than promoting restrictions of a large range of antimicrobials, which might prove impossible, antimicrobial-control programs should focus on specific clinical situations where control of excessive antimicrobial use can be achieved without compromising quality of patient care. Such an approach is presently promoted by the European Strategy for Antibiotic

Prophylaxis project, which aims at discouraging the use of unverified practices and encouraging the application of evidence-based medicine for antibiotic prophylaxis in surgical patients, as well as prophylactic and empirical antimicrobial use in intensive care patients.[6-9]

Initiatives to implement antibiotic policies must be encouraged, especially in countries where hospitals have severe resistance problems. Although the qualitative aspect of antimicrobial use is important, antibiotic policies also should aim at reducing the total quantity of antimicrobials used, starting with situations where quality of care will not be compromised, ie, unnecessary and prolonged prophylactic and empirical prescriptions. Their effectiveness should be evaluated thoroughly, both qualitatively and quantitatively, and not only on restricted antimicrobials but also on non-restricted ones. Finally, the resulting effect of the policy on antimicrobial resistance should be evaluated not only on selected microorganisms but on the whole range of pathogens responsible for infections in hospitalized patients.

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Correction

Klebsiella pneumoniae Bloodstream Infections in Neonates in a Hospital in the Kingdom of Saudi Arabia

In the article "*Klebsiella pneumoniae* Bloodstream Infections in Neonates in a Hospital in the Kingdom of Saudi Arabia," published in September 1998 (*Infect Control Hosp Epidemiol* 1998;19:674-679), an error was introduced during the final stages of production. On page 675, column 1, paragraph 2, the second sentence should read, "In study 1, case patients were compared with 20 control patients matched by date of admission ±18 days and duration of hospitalization before a reference date."

We apologize for the error and for any inconvenience this may have caused our readers.