Comment on: Swine flu and antibiotics

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Sir,

In a recent article, Barlow commented on behalf of the British Society for Antimicrobial Chemotherapy on Department of Health guidance on antibiotic use in suspected H1N1 influenza. Concerns were expressed that the indiscriminate use of broad-spectrum antibiotics would undermine strategies to reduce emergence of Clostridium difficile and methicillin-resistant Staphylococcus aureus infections. The authors mentioned that experience with the H1N1 pandemic so far is that bacterial superinfection is infrequent. A recent post-mortem investigation by the US CDC of patients who died from H1N1 influenza this year in the USA showed evidence of concurrent bacterial infection in specimens from 22 (29%) of the 77 patients who died, including 10 patients with Streptococcus pneumoniae infection. Barlow suggested making the decision whether to give antibiotics based on signs and symptoms, non-specified investigations and epidemiological data. Previous studies showed that clinical signs and symptoms as well as commonly used laboratory markers such as white blood cell count are unreliable in distinguishing viral from bacterial lower respiratory tract infection.

A recent multicentre, non-inferiority, randomized controlled trial in Switzerland included 1359 patients with mostly severe lower respiratory tract infection and used procalcitonin (PCT), which is released in bacterial but not viral infection, for decision making on antibiotic use. The investigators randomized patients to administration of antibiotics based on a PCT-based algorithm with pre-defined cut-off ranges for initiating or stopping antibiotics, or based on standard guidelines (control group). According to the PCT algorithm, initiation or continuation of antibiotics was strongly discouraged if PCT was <0.1 μg/L and discouraged if levels were ≤0.25 μg/L. Initiation or continuation of antibiotics was strongly encouraged if PCT was >0.5 μg/L and encouraged if levels were >0.25 μg/L. If antibiotics were withheld, hospitalized patients were clinically re-evaluated and PCT measurement was repeated after 6–24 h.

All hospitalized patients were clinically reassessed to follow the resolution of the infection on days 3, 5 and 7, and at discharge. In patients in the PCT group with increased PCT values and antibiotic therapy, PCT measurements were repeated after 3, 5 and 7 days, and antibiotic treatment was discontinued using the same cut-off ranges. In patients with high PCT values on admission (>10 μg/L), the algorithm recommended stopping antibiotics if PCT levels decreased by 80% and the investigators strongly recommended stopping antibiotics if PCT levels decreased by 90% of the initial value. In outpatients, the initiation and duration of antibiotic therapy were based on the initial PCT value, and patients were reassessed only in the case of worsening disease.

Patients randomized to the PCT-guided group had the same outcome. This outcome was achieved with a significantly reduced exposure to antibiotics and fewer antibiotic-associated adverse events. This study confirmed previous smaller studies demonstrating a reduction of antibiotic use and duration with application of PCT as a decision-making tool.

The evidence from these studies is sufficient to justify a widespread application of PCT measurement as a tool for tailored antibiotic use in H1N1 influenza infection. Patients with features of pneumonia should, however, be commenced on antibiotics even if PCT levels are initially low, and PCT level measurements should be repeated 6–24 h later as there may be a delayed rise in levels.

Patients with initially normal PCT levels who deteriorate after this time need to have their need for antibiotics re-assessed with a repeat of PCT levels, as secondary nosocomial bacterial superinfection in patients hospitalized with viral respiratory tract infection may occur.

Transparency declarations
None to declare.

References