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Article

Rates of Antimicrobial Resistance in *Helicobacter pylori* Isolates from Clinical Trial Patients Across the US and Europe

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Abstract

Introduction:

Guidelines recommend that proton pump inhibitor (PPI)-based triple regimens with clarithromycin not be used for *Helicobacter pylori* infection in areas where clarithromycin resistance is $\geq 15\%$, or in patients with prior macrolide use. Up-to-date information on local resistance patterns is limited, especially in the US. Here, we report resistance rates to antibiotics commonly used to treat *H. pylori* from a large study conducted in the US and Europe (pHalcon-HP).

Methods:

Gastric mucosal biopsies were collected from adult participants with *H. pylori* infection during screening. Minimum inhibitory concentrations were determined via agar dilution for clarithromycin, amoxicillin, and metronidazole, with breakpoints ≥ 1 $\mu\text{g}/\text{mL}$, >0.125 $\mu\text{g}/\text{mL}$, and >8

µg/mL, respectively. Resistance rates were obtained for the US and Europe, and also for US subregions and participating European countries.

Results:

Resistance rates were established in isolates from 907 participants. Overall, 22.2% were resistant to clarithromycin, 1.2% to amoxicillin, and 69.2% to metronidazole. Resistance in the US and Europe was similar; metronidazole resistance was the most prevalent (50–79%) and amoxicillin the least ($\leq 5\%$). In all subregions, $\geq 15\%$ of isolates were resistant to clarithromycin, except the UK (0/8 isolates). Among clarithromycin-resistant isolates, 75% were also metronidazole-resistant. Two US isolates were resistant to clarithromycin and amoxicillin; one of these was also metronidazole-resistant.

Discussion:

The resistance rates observed in this study argue against the continued empiric use of PPI-based triple therapy containing clarithromycin, per treatment guidelines, and highlight the need for antibiotic resistance surveillance and novel treatment strategies for *H. pylori* infection in the US and Europe.

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