Summary

Background

WHO case management guidelines for severe pneumonia involve referral to hospital for treatment with parenteral antibiotics. If equally as effective as parenteral treatment, home-based oral antibiotic treatment could reduce referral, admission, and treatment costs. Our aim was to determine whether home treatment with high-dose oral amoxicillin and inpatient treatment with parenteral ampicillin were equivalent for the treatment of severe pneumonia in children.

Methods

This randomised, open-label equivalency trial was done at seven study sites in Pakistan. 2037 children aged 3–59 months with severe pneumonia were randomly allocated to either initial hospitalisation and parenteral ampicillin (100 mg/kg per day in four doses) for 48 h, followed by 3 days of oral amoxicillin (80–90 mg/kg per day; n=1012) or to home-based treatment for 5 days with oral amoxicillin (80–90 mg/kg per day in two doses; n=1025). Follow-up assessments were done at 1, 3, 6, and 14 days after enrolment. The primary outcome was treatment failure (clinical deterioration) by day 6. Analyses were done per protocol and by intention to treat. This trial is registered, ISRCTN95821329.

Findings
In the per-protocol population, 36 individuals were excluded from the hospitalised group and 37 from the ambulatory group, mainly because of protocol violations or loss to follow-up. There were 87 (8.6%) treatment failures in the hospitalised group and 77 (7.5%) in the ambulatory group (risk difference 1.1%; 95% CI −1.3 to 3.5) by day 6. Five (0.2%) children died within 14 days of enrolment, one in the ambulatory group and four in the hospitalised group. In each case, treatment failure was declared before death and the antibiotic had been changed. None of the deaths were considered to be associated with treatment allocation; there were no serious adverse events reported in the trial.

**Interpretation**

Home treatment with high-dose oral amoxicillin is equivalent to currently recommended hospitalisation and parenteral ampicillin for treatment of severe pneumonia without underlying complications, suggesting that WHO recommendations for treatment of severe pneumonia need to be revised.

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