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## Letter to the Editor

**Diphtheria in Hyderabad: Do we need to do anything differently?**

We read with interest the article by Meera and Rajarao on the clinical and epidemiological features of diphtheria in Hyderabad in Andhra Pradesh, India.<sup>1</sup> The study reports severe disease as well as a higher case fatality among non-immunized individuals. The data also highlight two important epidemiological features of disease which have implications for the control of diphtheria in the city: (1) 16% of cases were aged <5 years, with only a third (32%) of them vaccinated; (2) the remaining 84% of cases were among individuals aged ≥5 years, with the majority (2035/2925, 70%) in the age group of 5–30 years.

The Universal Immunization Programme of India recommends three doses of diphtheria–pertussis–tetanus (DPT) vaccine between 6 and 14 weeks of age (primary immunization), with two additional boosters at 16–24 and 60–72 months of age. Although the authors did not present the information on the number of doses of diphtheria vaccine received by the under-five vaccinated cases, assuming that all the vaccinated cases had at least received the three primary doses of DPT (a best case scenario), an efficacy of >95% for three doses of vaccine,<sup>2</sup> and 32% of under-5s vaccinated, the coverage of primary immunization in Hyderabad using Orenstein's method is estimated to be 90.4%.<sup>3</sup> This coverage corresponds well with the DPT3 coverage of 89.3% in Andhra Pradesh as per the 2009 coverage evaluation survey (CES).<sup>4</sup> The coverage of first DPT booster as per the CES was 58%. The coverage of second booster, though not reported, is expected to be even lower.

A large proportion of cases among those aged ≥5 years indicates susceptibility of older children, adolescents, and adults to diphtheria. The immunity acquired from the full course of diphtheria vaccination wanes in the absence of periodic boosters.<sup>2</sup> The coverage of boosters in Hyderabad is low and there is no diphtheria vaccination program for school children. A sero-survey in the city reported only 64% of school children to be immune to diphtheria.<sup>5</sup>

For the control of diphtheria in Hyderabad, the health authorities besides increasing the coverage of diphtheria boosters, also need to consider targeting school children. As more than 90% of children in Hyderabad attend primary school

(Govt of Andhra Pradesh, unpublished data), administering the second diphtheria booster at school entry and replacing tetanus-toxoid administered to school children at 10 and 16 years of age as a part of the school health program with the adult-type combined tetanus–diphtheria (Td) vaccine, will greatly improve the population immunity. With diphtheria cases increasingly reported from other Indian states and affecting older children (5–19 y),<sup>6</sup> policy-makers need to consider if these recommendations could be extended to other Indian states/cities.

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