Commentary

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Whooping Cough

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Introduction

Pertussis (whooping cough) is one of the most frequent vaccine-preventable illnesses, killing over 300,000 children each year [1]. In the United Kingdom, an expedited schedule of primary pertussis vaccines at 2, 3, and 4 months was implemented in 1990, and primary vaccine coverage has been over 90% since 1992 [2]. Immunity after vaccination, on the other hand, is only known to persist 4-12 years, whereas immunity after infection is believed to last 7-20 years [3]. Pertussis is recognised as a significant source of socioeconomic stress in teenagers. Pertussis was found to be related with a mean medical expense of $242 (£144; €177) in the United States, and to cause school absenteeism in 83% of teenagers for an average of 5.5 days during a two-year period [4]. Between 2001 and 2005, 37% of UK school-aged children presenting with persistent cough in primary care had signs of recent pertussis infection [5]. In October 2001, the UK introduced a pertussis booster vaccine for pre-schoolers. Children should receive a preschool pertussis booster immunisation with a three component (Infanrix-IPV) or five component (Repevax) acellular pertussis vaccine three years following completion of the initial vaccination course or soon afterwards, according to current UK recommendations [6]. Children who also receive the preschool pertussis booster vaccination have a risk of pertussis that is roughly halved when compared to children who only receive a three-dose course of primary vaccinations (vaccine effectiveness 46%, 95% confidence interval-7% to 71%) [2]. However, in the United Kingdom, a teenage pertussis booster vaccination has yet to be introduced. Modelling of its potential cost effectiveness and observed increases in the incidence of pertussis among teenagers and adults led to the adoption of an adolescent pertussis booster vaccination in numerous countries, including Australia, Canada, France, Germany, and the United States [7,8]. The adolescent pertussis booster immunisation Tdap (Tetanus, Diphtheria, and Pertussis) has only been partially successful in avoiding hospitalisation of babies due to pertussis in the United States, probably due to low vaccination coverage. Since the introduction of the teenage Tdap vaccine in 2005, however, there has been a steady decrease in the ratio of pertussis incidence in adolescents compared to other age groups. In the United Kingdom, there has been a steady increase in the incidence of pertussis among older children and adults, both before and after the introduction of the preschool pertussis booster vaccine [2]. This is due in great part to the availability of serology testing beginning in 2002. Over the same time period, no significant changes in pertussis-related hospital admissions were detected. However, beginning in the fourth quarter of 2011, there was an upsurge in pertussis activity in teenagers and older adults, which persisted into 2012 and spread to all age groups, culminating to the declaration of a countrywide outbreak in April 2012. Despite the fact that pertussis incidence reduced in 2013, illness levels in non-infant age groups continued to rise relative to pre-2012 levels. Although the main aim of pertussis vaccination is to reduce the risk of severe pertussis during infancy, Because the evidence to support their introduction to reduce severe pertussis in infants is still insufficient, the World Health Organization recommends that decisions about the introduction of national adolescent booster vaccination programmes be based on the likelihood of these being cost effective and reducing the incidence of pertussis in the target age group [9]. The robustness of these findings is constrained by a considerable degree of ambiguity regarding critical factors, such as the incidence of symptomatic and asymptomatic cases of pertussis and the expenses associated with clinical pertussis in different age groups. The Joint Committee on Vaccination and Immunisation in the United Kingdom is assessing the need for a teenage pertussis booster vaccination and has determined that more study is needed to quantify the expected disease burden in this age group [9]. This study seeks to contribute to these issues by quantifying the prevalence and clinical severity of pertussis in UK school-aged children who arrive in primary care with a persistent cough after receiving the preschool pertussis booster vaccine.

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