tory capacities while the State government to continue to support measles surveillance activities.

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Serotypes and beta-lactamase-producing Haemophilus influenzae isolated from children attending childcare centres in Kuala Lumpur post vaccination era

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Background: In Malaysia, infectious diseases caused by *Haemophilus influenzae* has changed considerably in recent years because of the widespread and routine immunization of children introduced in 2002 against type b organisms. Despite that, *H. influenzae* remains a significant pathogen and colonization of the upper respiratory tract is a risk factor for developing disease. This study aimed to identify the serotype distribution and determination of ampicillin resistance genes of *H. influenzae* strains that are asymptomatically carried by healthy children post vaccination.

Methods and materials: Twenty-four *H. influenzae* isolates were obtained from oropharyngeal swabs of healthy Hib vaccinated children aged 2–4 years old ($n = 436$) attending registered childcare centers ($n = 30$) in Wilayah Persekutuan Kuala Lumpur (August 2018–May 2019). *H. influenzae* isolates were characterized by serotyping using standard slide agglutinating test, ampicillin susceptibility testing and resistance associated gene sequencing.

Results: Of 24 *H. influenzae* isolates, there were 5 Hib strains (21%, 5/24) whereas serotypes other than type b were 11 strains (46%, 11/24) and 8 strains were NTHi (33%, 8/24). Number of *H. influenzae* isolates with serotypes a ($n = 3$), c ($n = 3$), e ($n = 1$) and f ($n = 4$). The rate of ampicillin resistance was 25% (6/24). All ampicillin resistant strains were also beta-lactamase positive. (BLPAR). Out of these, 2 were serotype Hib strains, one each from serotype a and f, and 2 were NTHi. Of these 6 BLPAR isolates, 4 strains possess the TEM-1 β-lactamase gene.

Conclusion: The findings that 21% of *H. influenzae* isolates were Hib and only 2 out of 5 Hib strains were BLPAR and possessed TEM-1 β-lactamase gene shows that despite routine immunization of children, they still carried Hib asymptomatically and not many strains showed reduced susceptibility to β-lactam antibiotic. To evaluate the effectiveness of the Hib conjugate vaccines given to children,a bigger study is needed. Also, due to the limited data of Malaysian epidemiology of *H. influenza*, this data will contribute to better understanding of post vaccination impacts on *H. influenza* carriage in children.

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Participatory disease surveillance in India: A critical interpretative synthesis!

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Background: Participatory disease surveillance (PDS) has made a recent foray into the armamentarium for disease control. This current study aims to explore the availability of PDS platforms or tools available across the world and in India, critically assessing the applicability of such a system in urban India.

Methods and materials: Three bibliographic databases (Medline, Global Index Medicus and Cochrane library) and worldwide web were screened for any document mentioning a newer approach for disease surveillance or utilization of technology or m-health in conducting disease surveillance. Critical interpretative synthesis was done to study the theory of applicability of m-health in disease surveillance in India learning from global experiences and critiquing the same considering the current Indian scenario.

Results: Integrated disease surveillance project (IDSP) is decentralized surveillance system in India along with vertical surveillance programs existing in few priority diseases. However, poor involvement of private players in health, the first point of contact emphasize on the need for newer approaches in disease surveillance. Health being a state subject leads to autonomy with the states in regard to reporting of outbreaks. This leads to delay and incomplete reporting in many cases. India has the second largest internet users in the world with 82% people having access to smartphones. Increasingly users in India are utilizing various functionalities of smart phones in every day life. PDS globally has involved Influenza like illness, vector borne and food borne diseases in few cases. M health has been utilized in disease surveillance in countries with similar socio-demographic profile e.g. Srilanka, Thailand. Smartphone geospatial apps for dengue have recently been developed in India but their applicability in community settings and ways to ensure community participation is yet to be tested. Vector borne diseases can initiate participatory surveillance in Indian settings as much community awareness is created by the health system.

Conclusion: With India leading in number of smartphone users and the availability of cheapest internet facility, use of m health to complement traditional disease surveillance system is a promising option. Continued interest and representativeness of information from the community is a challenge as in other countries.

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