Editorial

Clinical practice guidelines for influenza and pneumococcal vaccination: The Indian perspective

Lower respiratory infections (LRI) are a cause of considerable morbidity and mortality globally. According to the Global Burden of Disease (GBD) 2016 estimates, LRI, defined as pneumonia or bronchiolitis, were the leading cause of mortality and morbidity worldwide, leading to approximately 2.38 million deaths in 2016.[1] The prevalence of LRI in all age groups was found to be highest in Sub-Saharan Africa, South Asia, and Southeast Asia.[1] In these estimates, *Streptococcus pneumoniae* emerged as the leading cause of LRI morbidity and mortality globally, contributing to more deaths (1,189,937 deaths), compared to all other etiologies combined.

Influenza is ubiquitous in its affliction of humankind. Consequent upon the ability of the influenza virus to mutate as a result of antigenic drift and shift, regular outbreaks/epidemics and even pandemics have been reported in the recent past. According to GBD, influenza LRI was responsible for an estimated 145,000 deaths among all ages in 2017, the mortality being the highest among adults >70 years and dwellers of Eastern Europe. Influenza LRIs accounted for 9,459,000 estimated hospitalizations and 81,536,000 hospital days with about 11.5% of LRI episodes attributable to influenza, corresponding to 54,481,000 episodes and 8,172,000 severe episodes[2] These estimates are, however, considerably lower than those by another group of investigators in early 2018 who put the estimated figure of annual influenza-related deaths at about 409,111.[3] India contributes to a significant burden of global influenza and exhibits a characteristic sub-regional diversity of seasonality across the vast expanse of its landmass with varied meteorological indices.[4,5] Following the first report of influenza A/H1N1pdm09 in 2010, regular outbreaks of influenza have been reported from the country.[6-9] The emergence of a new clade of influenza A/H1N1 virus (A/Michigan) was documented in the country in 2015 that largely replaced the California strain of A/H1N1, the agent responsible for the 2009 pandemic.[9] Influenza virus has been implicated in the causation of virus pneumonias,[10] CAP,[11] and acute exacerbation of chronic respiratory disease in India,[12,13] at a huge cost to the exchequer.[14] Against this backdrop, an effective vaccination against influenza is a very attractive mode of protection against various influenza-related illnesses.

Streptococcus pneumoniae has been reported to be responsible for about 20%–30% of community-acquired pneumonia among Indian patients.[11,15] Pneumococcal disease is more frequent at extremes of age and there is a high burden of morbidity and mortality in the elderly when there is a higher prevalence of co-existing cardiovascular, pulmonary or metabolic disorders like diabetes mellitus. The current issue of Lung India carries the joint consensus statements of experts the two respiratory medicine societies of the country, the Indian Chest Society and the National College of Chest Physicians, regarding Clinical Practice Guidelines regarding influenza[16] and pneumococcal vaccination,[17] focusing primarily on the vaccination policies from an Indian perspective.

Influenza vaccination is arguably regarded as the most important intervention that can prevent the development of influenza illness and its complications. In spite of the fact that India was the most affected country in the 2018 pandemic of H1N1 influenza, with nearly 15 million death; the recognition that influenza contributes to the causation of routine acute respiratory illness that can degenerate into severe acute respiratory distress syndrome and fatality, is rather recent as the routine surveillance of influenza in various parts of the country has been systematically undertaken only from 2004 onward[4-6] after the inking of a Cooperative Agreement between the Indian Council of Medical Research and the CDC, USA for strain surveillance of influenza. This surveillance established that influenza was indeed a common cause of respiratory illness and exacerbations of chronic respiratory disease and also provided an insight into the various strains circulating in the country. More importantly, however, the surveillance established the patterns of the seasonality of influenza circulation in the country demonstrating a largely Southern hemispherical (SH) pattern of seasonality in the country as against the long-held belief of a Northern hemispherical (NH) pattern of seasonality because of the geographic location of the country as a whole in the Northern hemisphere.[4,5] The data also suggested a latitude-related pattern of sub-regional differences in seasonality in the country. The regions located south of the 30° latitude largely exhibited an SH type of circulation with some minor exceptions and those north of the 30° latitude exhibited an NH-pattern of seasonality.[18] These patterns of seasonality have influenced the recommendations for vaccination timings in the country.[4,5] The consensus statements have recommended the same pattern of vaccination timings in the country while rightly emphasizing the expansion of surveillance in other areas of the country so that seasonality directed vaccination strategies can be adopted. A large network of Viral Diagnostic and Research laboratories has been established by the ICMR in the country that has been strengthened during the ongoing COVID 19 pandemic. This network

is going to be of immense benefit to document influenza seasonality in the country, once the current pandemic is over.

The Expert group on influenza vaccination has recommended preferable use of the quadrivalent influenza vaccine. A concomitant circulation of both lineages of influenza B (Yamagata as well as Victoria) has been documented in most previously studied seasons in India whenever there was either a concomitant or a dominant circulation of influenza B.[5,19] Influenza vaccination in India is, however, plagued by its low uptake even in groups at high risk for complications.[20-25] This requires an upscaling of the sensitization strategies, especially among the health-care providers. Physicians and physician trainees are the ones most resistant to change as other healthcare workers change their practices more easily than physicians and this behavior is regarded as the biggest impediment to vaccination.[25] A comparison of the uptake of tetanus toxoid and influenza vaccine testifies to that, the uptake of the former being about 100%, whereas that of influenza vaccine being nil in pregnant females.[22]

The other consensus statement of the Expert Panel deals with Pneumococcal vaccination wherein the panel has recommended vaccination for various individuals at high risk for acquiring the pneumococcal disease and its complications, including those with chronic respiratory disorders.[17] These recommendations have also been presented with an Indian perspective. We know that recently the Advisory Committee on Immunization Practices (ACIP) rescinded its prior recommendation to vaccinate all adults ≥65 years old with both PCV13 and PPSV23.[26] ACIP now recommends PPSV23 (polysaccharide vaccine) for all patients in this age group and advises clinicians to engage in shared decision-making to determine whether PCV13 (conjugate vaccine) should be given in addition to PPSV23 for patients who otherwise lack an indication for dual vaccination (e.g., impaired splenic function, cochlear implant). The change in the recommendation by the ACIP is based on the dramatic reduction in the incidence of infection with PCV13 serotypes of *Pneumococcus* that has resulted from universal childhood PCV13 vaccination.[26] The consensus statement however, continues to recommend PCV 13 as the first choice followed later by PPSV 23.[17] This is based on the premise that since PCV in India has been introduced in children only recently and is being slowly rolled out across the country as a part of the Universal Immunization Program, the serotypes causing disease are likely to be the same that are contained in the PCV 13 and as such vaccination against those serotypes would be important till we reach a stage of near-universal immunization among children that would eventually result in serotype switch in the nasopharyngeal flora of Indian children.[17] The consensus statement has also recommended PCV 13 in individuals aged >50 years of age, without any shared discussion regarding its use. This recommendation is supposed to based on the fact the life expectancy of Indian adults has only recently been known to have reached 67 years in males and 70 years in females and the Ministry of Health and Family Welfare considers all individuals >50 years as "older adults." As the life expectancy of the average Indian changes and as the nasopharyngeal spectrum of the serotypes of *pneumococcus* change the recommendations may require appropriate modifications. This requires an assessment of the benefit of the vaccination as also surveillance of the prevalent serotypes in the population to take an informed decision regarding continuing with PCV. Given the burden of pneumococcal disease in Indian subjects, most of the Indian Medical Societies have recommended similar guidelines for Indian patients with diabetes, kidney disease, etc.[27-29]

Coming from the two leading chest societies of India, the Clinical Practice Guidelines are indeed a welcome addition to the guidelines proposed by other Indian medical societies, paricularly addressing the unique circumstances in the country. The continued surveillance for both influenza and pneumococcal serotypes cannot but be strongly emphasized to generate data that might eventually lead to the updation/modifications of these recommendations, if and when needed.

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Koul PA is a member of the National Technical Advisory Group on Immunization (NTAGI), a body of experts that recommends vaccination strategies to the Government of India. The opinion expressed are his own and do not reflect the policy of the NTAGI or the Government of India.

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