International Conference on
Euro Obesity, Endocrinology and Diabetes

40th Euro Global Summit and Expo on
Vaccines & Vaccination

6th International Anesthesia and Pain Medicine Conference

30th International Conference on **Clinical Pediatrics**

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WEBINAR

Measuring the benefits of mass vaccination programs

Hector Magno
Independent Computer Scientist, Beatrice Golomb, UC San Diego School of Medicine, USA

Introduction: Since the late 1940s, mass vaccination programs in the USA have contributed to the significantly reduced morbidity and mortality of infectious diseases. To assist the evaluation of the benefits of mass vaccination programs, the number of individuals who would have surged death or permanent disability in the USA, had mass vaccination never been implemented, was estimated for several infectious diseases.

Materials & Methods: The estimates accounted for mortality and morbidity trends observed for the infections prior to mass vaccination, adjustments of pre-vaccine estimates using data recorded after vaccine licensure, and the impact of advances in standard of living and health care (such as improved nutrition, sanitation, hygiene, and the treatment of disease). The estimates also considered populations with and without known factors leading to an elevated risk of permanent injury from infection. The estimates are based on data principally from reports of the CDC, complemented by reports from other federal entities such as the US Bureau of the Census and the US Public Health Service. Data recorded in scientific journals (e.g., JAMA, Pediatrics, JID, NEJM, and JCO) were used in cases when data from government sources were unavailable or incomplete. The estimates focused on the population <80 years of age because the life expectancy in the USA was 79 years.

Results: Mass vaccination programs may prevent 20 million infections and 12,000 deaths and permanent disabilities annually among individuals <80 years of age. Individuals who have conditions or behaviors that would put them at higher risk of permanent injury from infectious diseases comprise 90% of all the estimated cases of prevented death and permanent disability. Although 9,000 of the estimated prevented deaths and disabilities were from liver cirrhosis and cancer, mass vaccination programs have not, at this point, shown empirical impacts on the prevalence of those conditions. The table below summarizes the results for the infections examined in this report. Mass vaccination programs targeting rotavirus, hepatitis A, influenza, meningococcal disease, and pneumococcal disease were each estimated to prevent fewer than 100 deaths among individuals <80 years of age.

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INFECTION	NUMBER OF CASES (MORBIDITY)	NUMBER OF DEATHS & PERMANENT DISABILITIES AT NORMAL RISK*	NUMBER OF DEATHS & PERMANENT DISABILITIES AT HIGH RISK*	HIGH RISK FACTORS
MEASLES	40,00,000	41	467	Insufficient vitamin A
MUMPS	40,00,000	61	0	
RUBELLA	40,00,000	19	140	Infant of woman that had not contracted rubella before pregnancy
TETANUS	1,800	113	0	
DIPHTHERIA	560	28	0	
PERTUSSIS	13,00,000	123	0	
POLIO	72,500	353	1,149	Absence of tonsils, not resting after the onset of significant symptoms
HIB	2,800	66	208	Breastfed for <13 weeks
HEPATITIS B	1,90,000	106	3,034	Infant of an infected mother, dwelling with an infected individual, sex with an infected partner, sex with multiple partners, men having sex with men, injection-drug use, dwelling in a community with an unusually large group of infected individuals
VARICELLA	40,00,000	101	0	
HPV	28,00,000	198	5,711	Smoking, women not screened every 3 years, men with 6 oral sex partners in their lifetime

*"High risk" refers to individuals with specified factors linked to an elevated risk of permanent injury from the infection. "Normal risk" refers to individuals without those specific known factors and also refers to individuals with risk factors that were not identified or were excluded in our analysis.

Biography

Hector Magno is a researcher, data analyst, and software developer. He attended UC Berkeley as a Regent and Chancellor's Scholar and earned a degree in Computer Science. He also attended UC Berkeley as a National Science Foundation fellow, earned a graduate degree in Computer Science, and received the National Science Foundation Award in Mathematics.