Vaccination against seasonal influenza during pregnancy in accordance with the STIKO recommendation

– Analysis using pregnancy cohorts from 2010 to 2014

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Abstract

Introduction:
During the 2009/2010 influenza pandemic, it was observed that pregnant women have an increased risk of severe disease progressions and increased mortality. In 2010, the Standing Vaccination Committee (Ständige Impfkommission, STIKO) at the Robert Koch Institute (RKI) published a recommendation for the vaccination of pregnant women against seasonal influenza. All pregnant women should be vaccinated from the second trimester and where there are any increased health risks as a result of certain underlying diseases then from the first trimester. More recent investigations also showed a positive effect on the neonates of vaccinated mothers. In the first six months of life, infants born to mothers who had been vaccinated against influenza during their pregnancy had a significantly lower risk of having to be admitted for treatment for respiratory diseases. The current analysis aims to investigate the extent to which the STIKO recommendation has been implemented in the statutory health insurance (SHI) physicians sector in Germany. The investigation will also provide regional results in order to identify any need for action on a region-specific basis.

Methods:
The national SHI physicians' claims data for 2009-2015 (VDX data) was used to determine pregnancy cohorts by year of the start of pregnancy for 2010 to 2014 using certain inclusion criteria. These cohorts, with between n = 444,375 and n = 478,444 pregnancies per year formed the denominators for the calculation of vaccination rates. Vaccination against seasonal influenza was determined by means of the symbol numbers (SNR) used by the regional Associations of Statutory Health Insurance Physicians (ASHIP-areas) to charge for vaccination services for the years 2010 to 2015. The vaccinations carried out during pregnancy therefore formed what is referred to as "basic vaccination rate". Influenza vaccinations arranged before the pregnancy started, the vaccination protection from which would still have been effective during pregnancy, were also taken into account. In combination with the "basic rate", the vaccination rate before pregnancy constitutes the "effective vaccination rate". On this basis, the vaccination rates in the pregnancy cohorts were calculated annually as the "basic vaccination rate" and the "effective vaccination rate". Furthermore, analytical processes such as the calculation of the relative risk, of the Pearson's correlation coefficient and the global and local Moran's I were used to show relevant correlations.

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Results:
In 2010, the year after the pandemic and the year in which the STIKO vaccination recommendation was introduced, the national "effective vaccination rate" against seasonal influenza in pregnant women was 10.2%. In 2014 it reached 10.6%. The vaccination rates varied significantly at a federal state level, with the lowest being Bavaria at 6.1% and the highest being Saxony-Anhalt at 23.1%. In 2014, this range was between 6.3% in Bavaria and 24.4% in Saxony-Anhalt. At a district level the regional variation was even more pronounced, with rates in 2014 of between just under 1% to 38.4%. Overall, 2014 showed a picture of a gradient between North/North-East Germany and southern Germany, with high levels of vaccination in Saxony-Anhalt, Lower Saxony, Brandenburg and Schleswig-Holstein but also in some districts in central Germany and in North Rhine-Westphalia. The calculation of the local Moran's I was able to identify a number of clusters at a district level, including in particular two very large ones with high-high autocorrelation in eastern Germany and one with low-low autocorrelation in southern Germany. At the district level, there was a positive correlation between standard seasonal influenza vaccination rates in the elderly population and seasonal influenza vaccination rates in pregnant women. The likelihood of women being vaccinated during pregnancy was more than 4.5 times higher if they had been vaccinated against seasonal influenza in the year before pregnancy.

Discussion/ Conclusion:
The results show that by 2014 the STIKO recommendation from 2010 for the vaccination of pregnant women against seasonal influenza had only been implemented to a limited extent with a few exceptions, and had been implemented to different extents at a regional level. The national vaccination rate of 10.6% calculated for 2014 was slightly higher than that from previous study results from other European countries as France (7%) and Italy (9.7%). It also almost corresponds to a web-based survey carried out earlier in Germany (10.9%). Only 25 out of 402 districts achieved "effective vaccination rates" of pregnant women of over 20%. This includes 9 districts in just one federal state, Saxony-Anhalt, making it a key area in Germany in terms of vaccinations. The reasons for the as yet cautious implementation of the vaccination recommendation should be investigated in greater detail in the future, in particular through qualitative studies. Among other things, willingness to be vaccinated and vaccination coverage against seasonal influenza among the general population appear to be significant when it comes to vaccination during pregnancy. The pronounced regional differences point to a different need for action at a regional or local level in order to improve the influenza vaccination rates among pregnant women across the board in Germany.

Keywords

Indicated vaccination, infectious diseases, influenza, pregnancy, seasonal influenza, standard vaccination, STIKO recommendations, utilization, vaccination, vaccination rate.

Citation

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