Taking a closer look - improved surveillance of meningococcal disease around the globe

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Background: Meningococcal disease is caused by the bacteria Neisseria meningitides. They colonize the nasopharynx asymptomatically and are transmitted between people by secretions. Severe illness and sequelae like deafness, cranial nerve loss and long term disability can be a consequence. Overall mortality for invasive meningococcal disease can be up to 40%. Meningococcal disease occurs as endemic but also epidemic disease worldwide (e.g. meningitis belt in sub-Saharan Africa, Saudi-Arabia during Hajj). There are 13 serogroups of Neisseria meningitidis based on different capsular polysaccharide structures, but only serogroups A, B, C, X, Y and W-135 cause most life-threatening disease. The most effective preventive strategies are targeted vaccination according to epidemiology and rapid chemoprophylaxis for close contacts of active cases. In order to know which vaccination is appropriate for which region of the world, it is important to know more about the distribution of serogroups. The aim of this study was to collect the latest data available about serogroup distribution in as many countries worldwide as possible.

Material/methods: During July 2014 – September 2015 we conducted a research where we reviewed papers searching through PubMed, Cochrane, Medline and Web of Science on the one hand and also browsed webpages of regional and international health authorities as well as of vaccine producers on the other hand and tried to get in contact by email.

Results: In Europe there’s a huge dominance of serogroup B. In Northern Europe above all in Sweden serogroup Y is leading agent. In Turkey and Saudi-Arabia serogroup W-135 is dominating. In African meningitis belt and in South Africa serogroup W-135 is the foremost strain. Mali is the only country where serogroup X is the main cause of meningococcal disease. In Asia data are rare. Mainly serogroup C dominates in China and Singapore, but there’s serogroup B as leading cause in Taiwan and Hong Kong. In Japan and Hong Kong (together with serogroup B) serogroup Y takes the front position. In Russia Serogroup A, B and C are almost equally distributed. Australia and New Zealand
have domination of serogroup B. USA and Canada have domination of serogroup B, although in the US serogroup C has also a huge share in meningococcal disease. Central America and the Caribbean have few cases. Together with South America there is a domination of serogroup B, C and Y. However in Chile and Argentina serogroup W-135 prevails.

Conclusions: The dynamic nature of meningococcal disease requires standardized, ongoing and improved surveillance in many countries especially in Asia, Africa outside meningitis belt and (South) East Europe in order to provide more and better data for vaccine policy and to monitor the impact of vaccines following introduction.