Specific prevention of influenza in orphanage children

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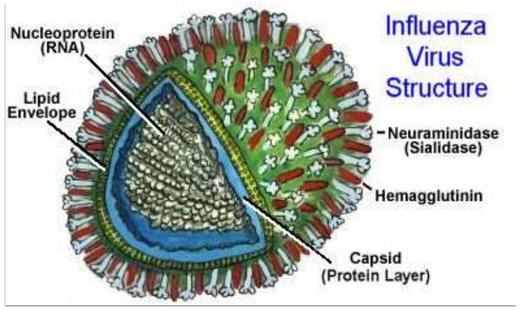
Influenza is a contagious disease caused by a group of respiratory viruses called influenza viruses. The three main types of influenza viruses that can cause the flu are types A and B, which cause yearly outbreaks, and type C, a virus that leads to mild, random cases.



http://www.scientificpsychic.com/health/virus.html

As influenza and influenza-related complications pose a severe threat to pediatric patients, the care and management of this virus involves prompt diagnosis, treatment, and prevention.

The influenza virus is highly contagious and causes serious illness that may result in hospitalization or even death.

According to the American Academy of Pediatrics (AAP), more than one-third of children younger than 6 years of age may be infected with an influenza virus each year. Also, the CDC reports that each year an average of 20,000 children under the age of five are hospitalized because of influenza complications. Internationally, the World Health Organization reports that influenza occurs globally with an annual attack rate estimated at 20% to 30% in children. Additionally, data show that children two to five years of age are more likely to be taken to a doctor, urgent care center, or the emergency room because of the flu. The CDC also reports that the flu causes more hospitalizations among young children than any other vaccine-preventable disease. For the 2014-2015 influenza season, more than 140 flu-related pediatric deaths were reported, as indicated in CDC data (Perez, Cassandra, 2016).

The **aim** is to study the clinical effectiveness of preventive vaccination against influenza in early age children in closed organized groups (orphanage).

The recommended vaccination schedule is one dose of inactivated vaccine annually, except for previously unvaccinated preschoolers, who have shown the introduction of two doses of influenza vaccines at intervals of one month.

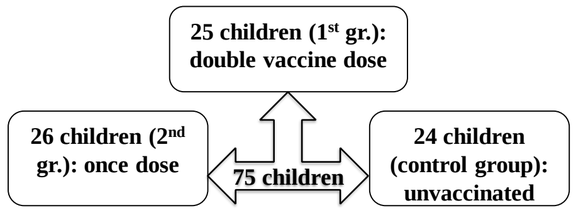


Fig. 1. The proportion of clinical group children

Seventy five children from Regional Specialized Orphanage (Chernivtsi, Ukraine) were observed and divided into 3 clinical groups (Fig.1). The observation lasted 1 year and included registration of acute respiratory viral infections rates and analysis of disease characteristics. Influenza vaccination was carried out using inactivated subunit vaccine.

Table 1. Peculiarities of acute respiratory viral infections in children of clinical groups

Clinical groups	Criteria	
	Frequency of acute respiratory viral infections, cases/year	Average duration of acute respiratory viral infection, days
Double vaccine dose	1,5±1,3	6,5±4,7
Once dose	1,9±1,2	11,0 ± 6,2
Unvaccinated	3,0±1,5	10,6±4,9
P<0,05	I:III, II:III	I:III

It was found that frequency of acute respiratory infections after vaccination was significantly lower in children, who received a double or once vaccine dose than in the control unvaccinated group. Average duration of acute respiratory viral infection was longer in once dose vaccinated children and in unvaccinated group (Table 1).

The results of clinical and epidemiological analysis of two schemes of vaccination allowed to reveal following patterns. Once dose vaccination was more effective to reduce the incidence of acute respiratory viral infections (not more two times a year) and frequency of hospitalization, but not sufficiently effective to prevent complications of acute respiratory viral infections (Table 2).

Table 2. Efficiency double relative to a single vaccination against influenza in orphanage children

Criteria	Efficiency criteria		
	RAR, %	RRR, %	NNT
Number of ARVI cases < 2	7,4	48,0	2,08
Average duration of ARVI < 7 days	2,6	7,6	13,23
The presence of complications	20,9	27,2	3,68
Hospitalization	3,7	48,0	2,08

Thus, the proportion of complications in children suffering from acute respiratory viral infections and once dose vaccinated, practically corresponded to unvaccinated persons. At the same time double dose influenza vaccination compared to once dose vaccinations was characterized by the relative risk reduction of complications by 27,2% and the relative risk reduction of hospitalization by 48%

Monthly analysis showed a decrease of the number of acute respiratory viral infections during the next year among the revaccinated children to compare of unvaccinated children. In unrevaccinated children the largest number of acute respiratory viral infections episodes in all surveillance groups was observed at the 5-6th month after vaccination (Fig. 2).

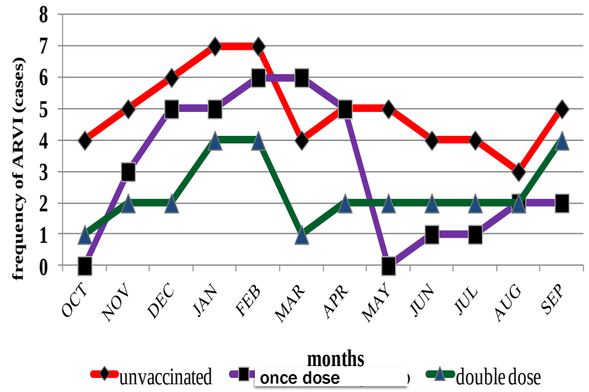


Fig. 2. The dynamics of ARVI morbidity per year in children of clinical group

Influenza vaccination is a highly effective method of active immunization of early age children in a closed organized group (orphanage). Revaccination at intervals of one month can significantly reduce the risk episodes of acute respiratory viral infections (more than two per the year), frequency of hospitalization and complications compared to unvaccinated and unrevaccinated children.

Abbreviations:
RAR – reduce of attributive risk
RRR – reduce relative risk
NNT – number needed to treat

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