Measles vaccines: WHO position paper – 28 April 2017
Grading of scientific evidence in support of key recommendations

Table III: Duration of protection following measles immunization

Population : Immunocompetent population
Intervention: Revaccination with measles-containing vaccine
Comparison : No revaccination with measles-containing vaccine
Outcome : Immunogenicity conferred by measles vaccine

PICO Question: Is there a substantial decrease in protection against clinical measles with increasing time following immunization?				
			Rating	Adjustment to rating
Quality Assessment	No of studies/starting rating		11 observational studies[1]	2
	Factors decreasing confidence	Limitation in study design	None serious	0
		Inconsistency	None serious[2]	0
		Indirectness	None serious	0
		Imprecision	None serious	0
		Publication bias	Not applicable	0
	Factors increasing confidence	Strength of association/ large effect	Not applicable	0
		Dose-response	Not applicable	0
		Antagonistic /mitigated bias and confounding	Not applicable	0
	Final numerical rating of quality of evidence			**2**
Summary of Findings	**Statement on quality of evidence**			Evidence supports a limited level of confidence that the true effect lies close to that of the estimate of the effect on the health outcome.
	Conclusion			The protective immunity against clinical measles does not seem to be substantially decreased with increasing time following immunization (low level of scientific evidence).

[1] Outbreak studies from many countries have failed to identify declining immunity as an important risk factor. Investigation of measles attack rates in 72 RMI households during a major measles outbreak in the Marshall Islands in 2003 showed similar and high vaccine-induced protection rates among children from 6 months to 14 years of age *(Marin M et al 2006).* Similarly, among 78 measles contacts in the islands of Palau, where no measles had occurred for 27 years, time since vaccination was not a significant risk factor for developing measles: RR1.6; (95% CI 0.3-9.4) for vaccination >15 versus <5 years ago *(Güriş D et al, 1996).* The investigation of a major measles epidemic in Romania 1996-98 concluded that vaccine induced protection was similarly high among 2,561children vaccinated 6-8, 9-11, or 12-14 years previously *(Hennessey KA et al 1999).* A follow-up of 4,500 trial participants in England and Wales 21 years after receiving one dose of measles vaccine showed continuing high level of protection compared with unvaccinated controls; there was no indication of waning immunity in the vaccinated group *(Miller C, 1987).* Subsequent follow-up of this trial population suggests that the protection from live measles vaccine persists unchanged for up to 27 years after vaccination *(Ramsay ME, 1994).* A number of studies of measles outbreaks in teaching institutions have concluded that the risk of clinical measles was not associated with length of time since vaccination: *Sutcliffe PA et al, 1996,* investigated a measles outbreak among 1135 students 14-21 years of age in Toronto; *Nkowane BM et al, 1987,* analysed the attack rate in relation to number of years after vaccination in 197 individuals during a measles outbreak in a highly vaccinated high-school population in Massachusetts; *Faust HS et al, 1983,* studied a measles outbreak involving 250 school-aged individuals in Michigan; and *Hersh BS et al 1991* studied an outbreak involving 86 cases at a college in Colorado. On the other hand, a retrospective cohort study of single-dose vaccinees in one school in New Mexico found that persons vaccinated ≥10 years before the outbreak were at increased risk, independently of age at vaccination *(Hutchins SS et al 1990).* Also, *Yuan L, 1994,* who investigated a measles outbreak involving 87 children in 31 Canadian schools concluded that subjects vaccinated before 1980 were at greater risk of contracting the disease than those vaccinated after 1980 (adjusted OR 14.5, 95% CI 1.5 to 135.6).

[2] Except for the reports by Hutchins SS et al and Yuan L the majority of these studies show consistent results.

References

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