Immunization Dialogue

Tests for Vaccine Efficacy

Q. 1. *Is it possible to have kits to easily evaluate seroconversion after vaccine administration with small amount of blood*[7]

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A. 1. Theoretically, it should be possible to develop diagnostic kits to detect or quantitate antibodies against the antigens we use in vaccines However, such a project has several difficulties as I shall explain below The various vaccines and the tests used for detecting immune responses are summarized in *Table I.*

Since each antigen has its own unique property, the tests for immune responses are very varied and they require specialised laboratory facilities and expertise Therefore, m practical terms, it would be very difficult to develop simple tests and kits for measuring immune responses to the different vaccines we use routinely.

Then how can we be confident about the quality of the vaccines we use and the immune responses of our children when we immunize[7] Broadly speaking, there are 2 methods.

The success of an immunization programme is not to be measured by coverage evaluation, although that is what the 'pundits' have told us It is to be measured by the degree of reduction of the incidence of the target diseases The measurement of incidence requires disease surveillance Each of us can help in this process Every time any of us sees cases of vaccine-preventable diseases, we must carefully docu-

TABLE I *Summary of Test(s) for Detecting Immune Response to Common Vaccines*

Vaccine	Test(s) 'for' immune response
BCG	* Tuberculin (PPD) skin test for delayed hypersensitivity
	* No reliable antibody assay available
OPV	* Virus neutralising antibody titration Requires cell culture facilities
	* Enzyme immuno assay
D (Diphtheria toxoid)	* Schick test (reagents are not easily available)
	* Titration of serum antitoxin activity
T (Tetanus toxoid)	* Titration of serum antitoxin activity
P (Pertussis vaccine)	* No good test is available to measure immune response
Measles vaccine	* Hemagglutination inhibiting antibody titration
	* Virus neutralising (plaque reduction) antibody titration Requires cell culture laboratory
Hepatitis B vaccine	* Quantitative enzyme immuno assay

merit the identify and address of residence of the patient, and the immunization history This information must be kept properly indexed, a copy must also be sent to the district health officer If cases are seen in immunized children, the district health officer must be alerted to investigate No vaccine e protects 100 per cent of children But "vaccine-failure" cases must be the exception, not the rule Such cases will enable the health officer to assess the quality of a vaccine, albiet retrospectively

Another method is for teaching hospitals to periodically assay the immune responses to various vaccines, both as a quality check and as a training process of post-graduate students in pediatrics and microbiology As we are dealing increasingly with high-priced vaccines, such as MMR, HBV, *H inflnenzae* b and cell culture rabies vaccines, it is very important for us to do occasional studies into their lmmunogenicity.

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