

# PROPHYLACTIC IMMUNIZATION AGAINST RABIES WITH DUCK EMBRYO VACCINE

A. H. SMITH, M.B., CH.B., D.P.H., D.T.M. & H., F.R.S.H., *Medical Officer of Health, Johannesburg*

Since early 1962, the Johannesburg Abattoir and Livestock Market Department has experienced periodic rabies 'scares' when rabid animals, all bovines, have arrived for slaughter from different parts of the Republic and South West Africa.

All normal public health precautions were taken in each case,<sup>1</sup> and in view of the number of persons coming into contact with such animals, it is fortunate that no human cases arose among those most at risk, such as veterinarians, slaughtermen, offal handlers and by-product workers.

Because of the inherent dangers involved it was agreed that all those at special risk should be offered immunization with the avianized rabies vaccine, despite the fact that at that stage of its development there was little proof that it evoked a satisfactory antibody response in protective levels under field conditions.

At the time the only findings<sup>2</sup> available were the preliminary results of a survey conducted on veterinary students at Onderstepoort, which showed that only 30% of those inoculated produced any antibody at all and only 18% had antibodies at protective levels.

Although the United States Public Health Service and other authorities had previously recommended the intradermal route, they were now inclined to favour larger doses given subcutaneously because of the inherent difficulties of proper injection of an intradermal dose of vaccine under field conditions.

However, because the procedures under review were to be carefully controlled under optimum conditions, the following schedule was decided upon:

Four injections of 0.2 ml. of avianized vaccine intradermally at weekly intervals followed by a booster injection of 0.2 ml. approximately 6 months later.

A blood sample, for measurement of antibody response, was taken before any injection was given, another approximately 1 month after the 4th injection and another approximately 1 month after the 5th or booster injection.

Preliminary findings elsewhere showed that persons receiving all their inoculations in the same arm produced a better neutralizing antibody response than those receiving their inoculations in alternate arms, presumably because the response of the local and regional lymph nodes to the antigen was greater when all were given on one side. For this reason all inoculations, except the first, were given intradermally on the left upper arm.

A total of 84 abattoir employees at special-risk were included in the survey. One veterinarian was excluded because of a history of severe sensitivity to hens' eggs.

All 84 showed no rabies antibodies present before commencement of the inoculations. Of 81 who completed 4 injections and had blood samples taken, 51 were White and 30 Bantu and Table I shows the results:

TABLE I. FOUR INJECTIONS OF AVIANIZED VACCINE

	Total	Positive		Negative		Incomplete*	
		No.	%	No.	%	No.	%
White	51	26	50.9	21	41.2	4	7.8
Bantu	30	9	30.0	17	56.7	4	13.3

\* Incomplete or inconclusive = weak antibody.

Of the 67 who completed 5 injections and had blood samples taken, 44 were White and 23 Bantu and Table II reflects the results:

TABLE II. FIVE INJECTIONS OF AVIANIZED VACCINE

	Total	Positive		Negative		Incomplete	
		No.	%	No.	%	No.	%
White	44	26	59.1	10	22.7	8	18.2
Bantu	23	10	43.5	9	39.1	4	17.4

In summary, therefore, it would appear that the booster or 5th injection raised the White antibody response from 50.9% to 59.1% and the Bantu from 30.0% to 43.5%.

The reasons for the markedly poorer antibody response in the Bantu is not known but, if one disregards race, it will be seen that after 4 injections the over-all conversion was 43.2%, which was raised by the 5th injection to 53.7%—which cannot be viewed with any satisfaction, especially by those employees-at-risk.

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## REFERENCES

1. Greathead, M. M. and Ehret, W. J. (1963): *J. S. Afr. Vet. Med. Assoc.*, **34**, 4.
2. Malherbe, H.: Personal communication.