

Perspective of the ACIP dengue vaccines workgroup on the evaluation of assays for pre-vaccination screening

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Workgroup Perspective (1)

- CDC evaluation had a small sample size (n=107); generalizability is limited
 - Goal to address problematic areas for specificity and cross-reactivity
- Most tests that work well for acute diagnosis did not perform adequately for pre-vaccination screening
- One ELISA assay and two versions of a rapid test performed best
- CDC results may be conservative (i.e., represent minimum performance) as the samples were selected to highlight problematic areas for sensitivity and specificity
- The test sponsor is planning on conducting a large prospective evaluation of the rapid test in Puerto Rico and the mainland

Workgroup Perspective (2)

- Prioritized assessing that an acceptable test(s) are/will be available for implementation of pre-vaccination screening
- Evidence to Recommendation Framework, draft recommendations will be presented to ACIP in spring for vote in June
- Minimal and optimal performance characteristics (target product profile) will be included in MMWR with ACIP recommendations
- The jurisdiction will have a role in ensuring that recommended test characteristics are met for pre-vaccination screening

Example Target Product Profile for a Dengue Test for Pre-vaccination Screening (Annecy, France Jan 2020)

Characteristic	Minimal	Optimal	CDC Evaluation Findings
Sensitivity	≥85%	≥95%	68–82%
Specificity	≥95%	≥98%	97–98%

Dengue Pre-vaccination screening workshop; Les Pensières Center for Global Health, Annecy, France – 2020
Developed by Partnership for Dengue Control and Global Dengue and Aedes Transmitted Disease Consortium

Workgroup Perspective (3)

- International target product profile can be adapted for U.S. territories context
 - High levels of flavivirus exposure (Zika virus)
- Specificity more important than sensitivity to “cause no harm”
- A sub-group is working on developing a target product profile for dengue vaccines workgroup review

Population-level impacts of the dengue vaccine in Puerto Rico

Total numbers of symptomatic and hospitalized cases across a 10-year timeframe for a cohort of 9-year-olds in Puerto Rico, as well as cases averted and additional hospitalizations among vaccinees. This represents a scenario with screening assay sensitivity = 0.80 and specificity = 0.98.

Prior exposure in 9-yr-olds	Baseline		Averted		Additional	Ratio
	Symptomatic	Hospitalizations	Symptomatic	Hospitalizations	Hospitalizations	averted/additional
30%	224,853	51,561	1,708	1,655	123	13/1
50%	263,515	62,205	4,417	3,531	59	60/1
60%	275,738	64,635	6,093	4,734	35	135/1

Questions

- Does ACIP concur with including pre-vaccination screening dengue IgG test target product profile in MMWR that accompanies ACIP recommendations?
- Are there other considerations the workgroup should address?