

Detection of Anti-Rubella Virus IgG and IgM Eluted from Filter Paper Dried Blood, Perú 2004-2005

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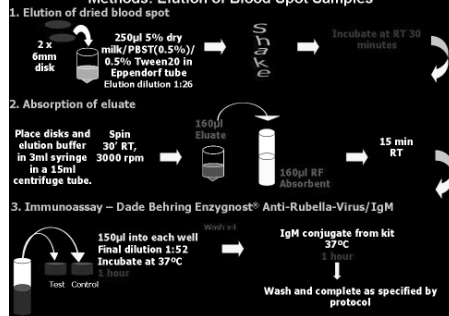
Study Design

- IRB approval Peru, PAHO, and CDC
- Enroll patients presenting to health centers in Peru with clinician-diagnosed acute rubella infection who:
 - Have fever and rash
 - At least 8 months old
 - Rash onset within 28 days
 - Not vaccinated with MMR within 9 weeks
 - Not pregnant and no known chronic disease
- Enrolled from 5 Zones: Lima Sur, Lima Ciudad, Lima Este, Tacna, and Huanuco
- Target number of rubella cases was 150.
- Since we were unable to get significant number of follow-up visits, enrolled approximately 100 people without suspected rubella infection (blood donors) as controls.

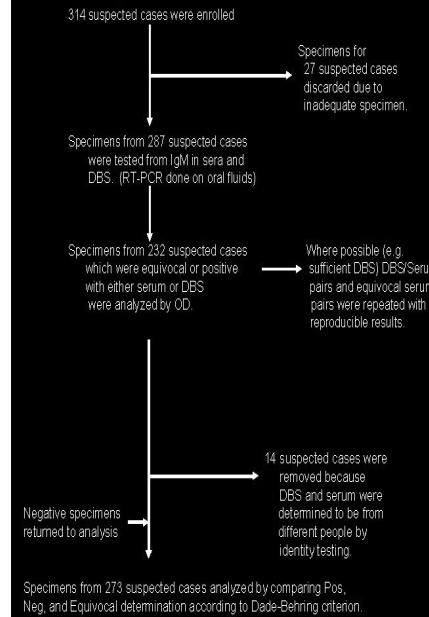
Methods

- For each subject enrolled:
- Obtain standard serum by venipuncture
 - DBS assay by finger stick
 - Oral fluid sample using Oracop
 - Collect basic demographic information on EPI measles/rubella form
 - Serum
 - IgM, IgG by Dade-Behring at CDC
 - DBS
 - IgM, IgG elution protocol as for measles at CDC
 - Testing done by Dade-Behring rubella IgM
 - STANDARD method using an amount of dried blood equivalent to standard amount of serum.
 - Oral fluid
 - RT-PCR on Oral Fluid (not described in detail in this presentation)
 - IgM, IgG in oral fluid planned by Microimmune rubella test

Methods: Elution of Blood Spot Samples



Specimen flow chart.



Comparison of IgM Results for DBS and Serum

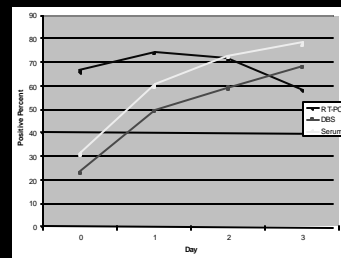
		DBS		
		Positive	Equivocal	Negative
SERUM	Positive	146	28	4
	Equivocal	2	17	17
	Negative	1	3	56

Comparison of IgM results for DBS and Serum after including equivocals in positives

		DBS	
		Positive	Negative
SERUM	Positive	193	21
	Negative	4	55

Sensitivity is 90%. Specificity is 93%.

Percentage of enrollees who were positive for rubella by three testing protocols during the first three days after rash.



Data for days 4 and beyond not included in this graph because of low number of enrollees.

Conclusions:

- Finger stick blood dried onto filter paper, stored at -20C with desiccant, eluted, and tested according to standard Dade-Behring protocols can be used for surveillance of rubella.
- Classifying equivocal results as positive gives good sensitivity and specificity for DBS results compared to serum (venous blood) for diagnosis of rubella. This classification procedure has been suggested by others (Karapanagiotidis, Riddell & Kelly).
- DBS signals in Dade-Behring IgM ELISAs are on average 17% below those of serum. This is more than observed for measles IgM where DBS signals were only 3% lower.