

THE EVALUATION OF ALTERNATIVE SAMPLING METHODS FOR MEASLES AND RUBELLA CASE CONFIRMATION IN TURKEY

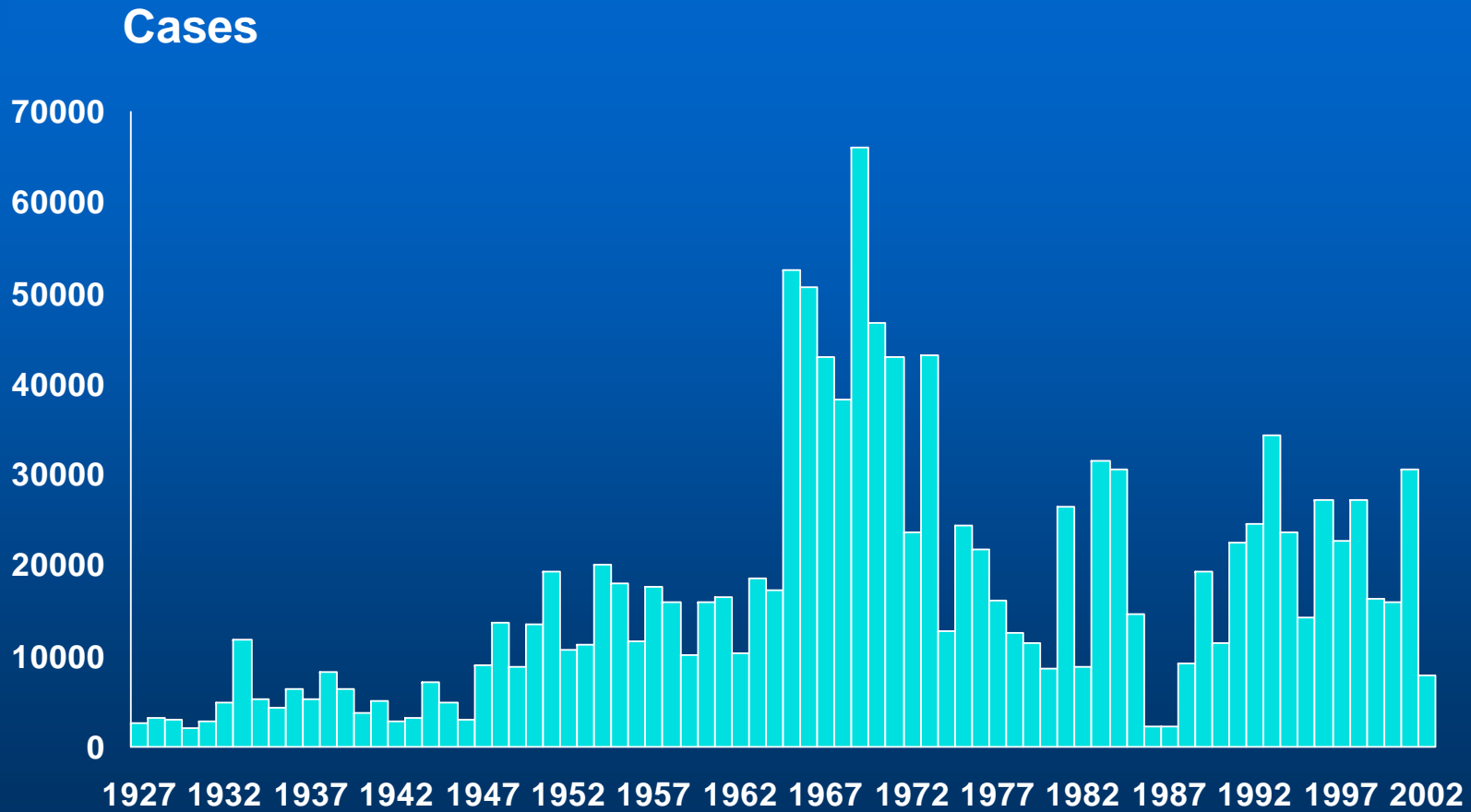


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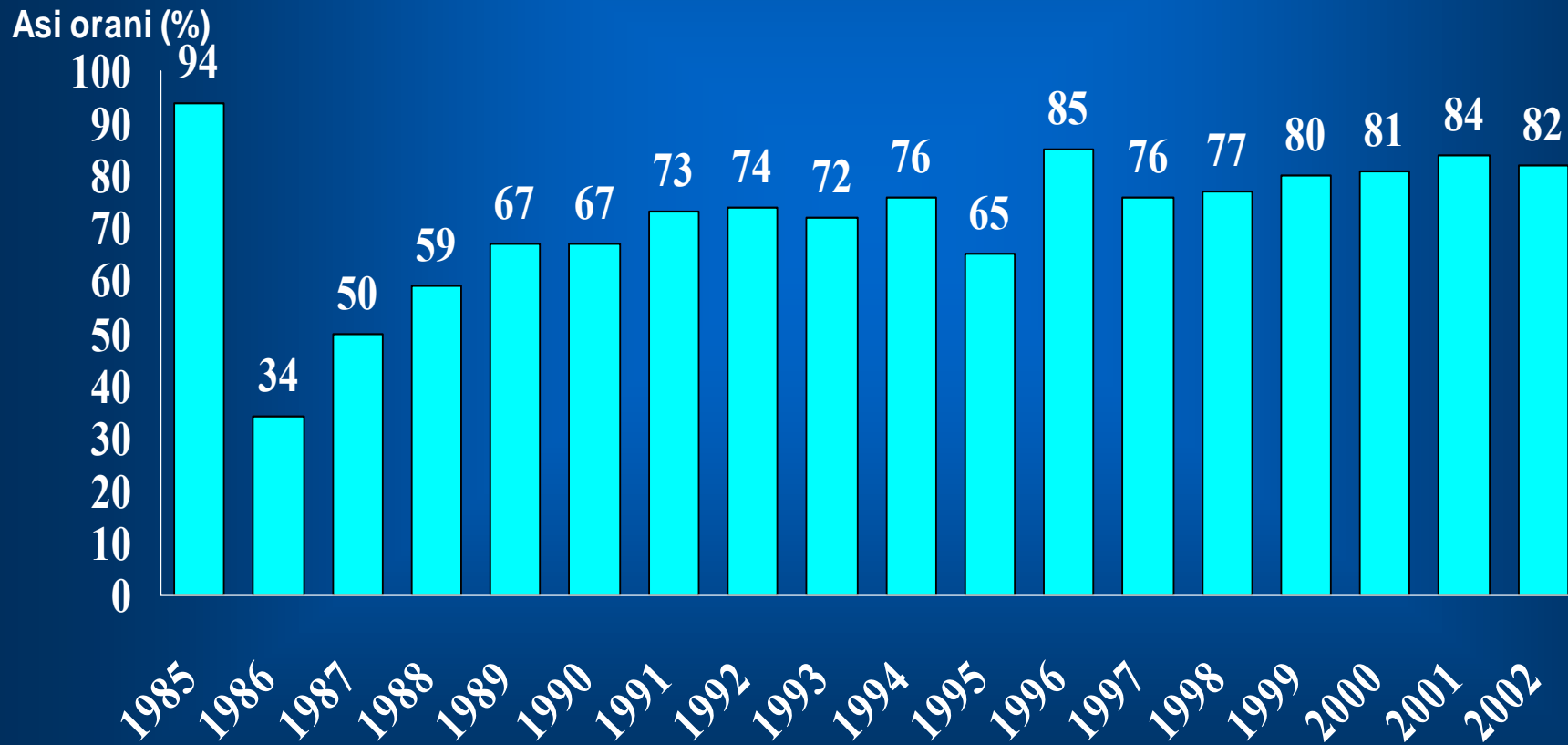


MEASLES CASES IN TURKEY 1927-2002



MEASLES VACCINATION RATES 1985-2002 (<1 Age)

National
Immunization
Days <5 yaş



- To reduce measles morbidity and mortality in Turkey, the Ministry of Health launched a National Measles Elimination Program in 2002.
- In parallel with the strategic plan of the European Regional Office of WHO, the Turkish national plan targets elimination of measles by 2010. According to this plan, a “catch-up” vaccination campaign aims to reach nearly 20 million children 9 months to 14 years of age.

- The first phase of this supplemental vaccination targeting school-aged children was conducted in December 2003 and 9.750.000 children were vaccinated.
- The second phase, targeting preschool-children and school-aged children not attending schools will be conducted in the fall of 2004.

PARTICIPANTS

- WHO
- Ministry of Health, Refik Saydam Hygiene Center, National Measles/Rubella Laboratory, Ankara
- Dicle University, Medical School, Public Health Department, Diyarbakir

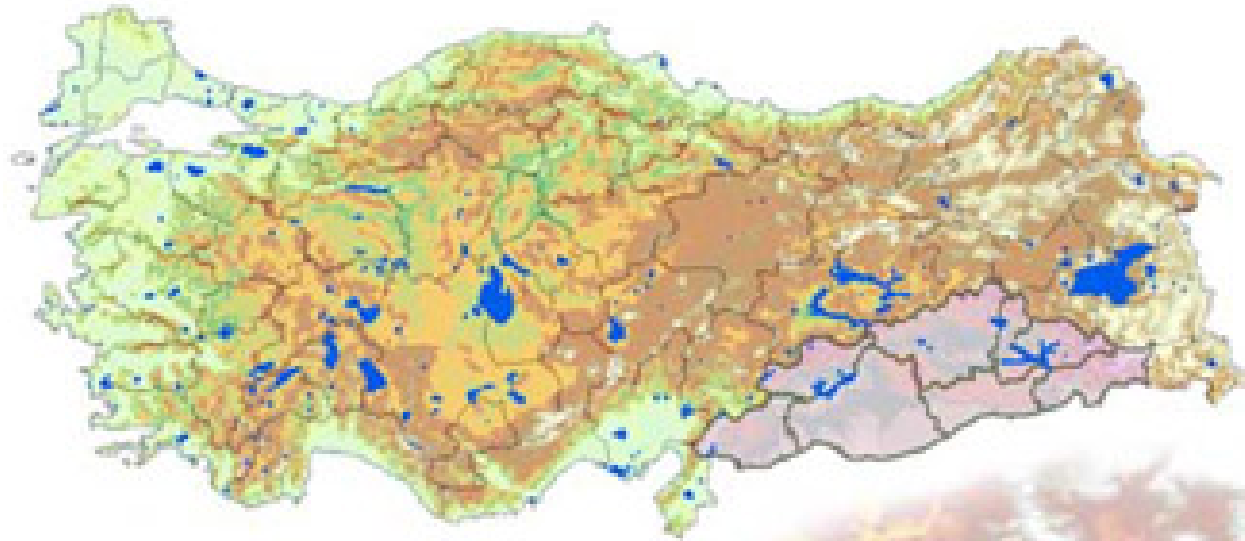
THANKS TO:

- From Diyarbakir Dicle University:
Ali Ceylan*, Meliksah Ertem* , Orhan Calik , Unal Ozturk
*:Coordinator of field study
- From Diyarbakir Regional Branch Laboratory:
Recep Kesici, Zeynep Dinc
- From Provincial Health Directorates in field:
Necip Yemenici, İlker Kat , Gökmen Özceylan,
Muharrem Öncül, Hüseyin Nantu, Mehmet Oğuz,
Bahadır Sucaklı
- From Ankara National Measles/Rubella Laboratory:
Omur Altinsoy, Saime Dikici

FIELD STUDY-I

Southeast part of Turkey;

- 9 cities (Diyarbakir,Adiyaman, Gaziantep, Sanliurfa, Kilis, Mardin, Batman,Siirt, Sirnak)
- 72 districts
- 115 villages

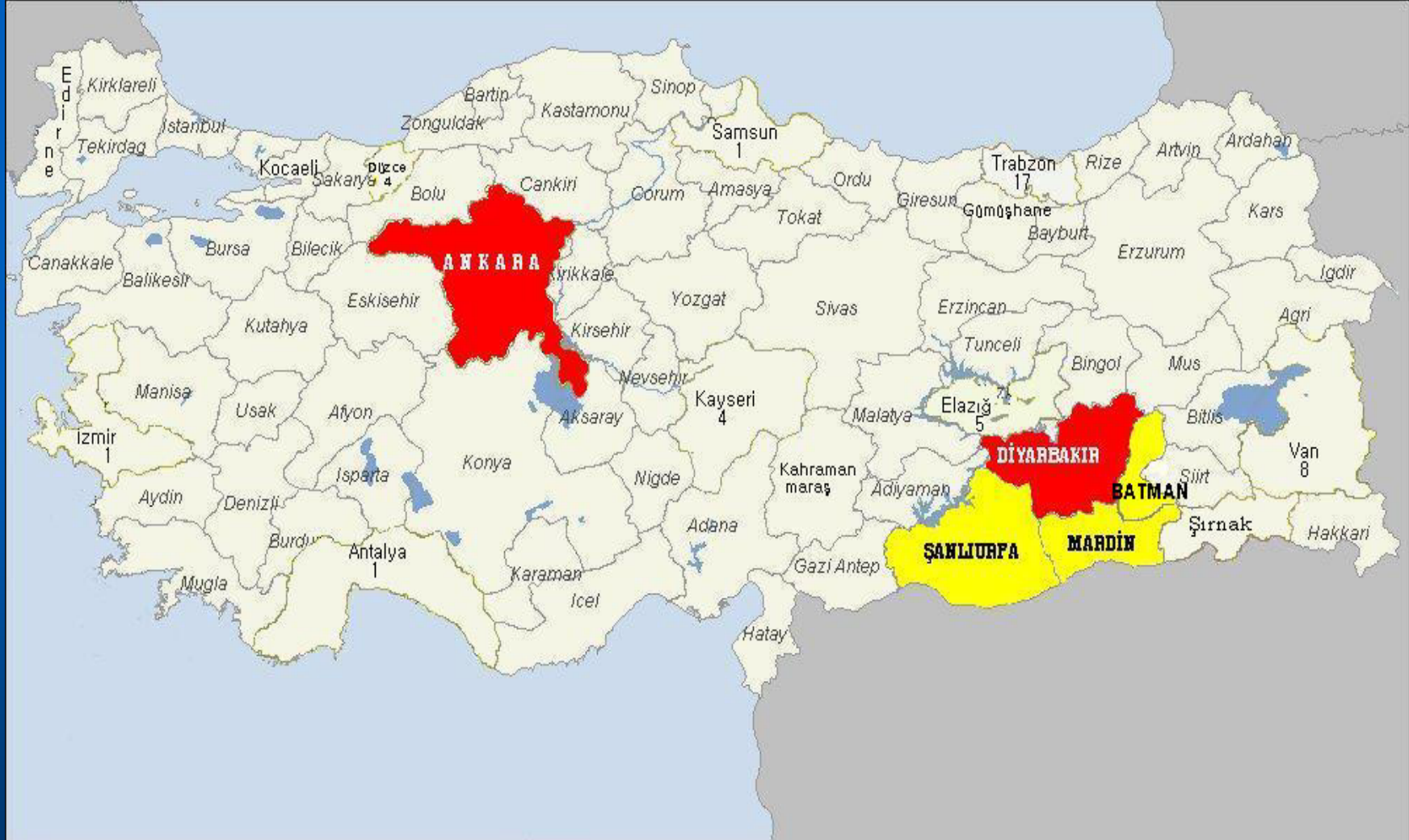


FIELD STUDY-II

- Project draft was presented to the The Ethic Committee of Dicle University Medical School by Dr. Ceylan and Dr. Ertem.
- A meeting was done with nine cities' primary health directorates.
- Measles case investigation forms and consent forms were prepared and distributed to the health centers.
- A surveillance system was established for investigation of outbreaks and collection of samples.
- In March-2003, an invitation letters were sent to the 120 health centers and collection of samples was started.
- Totally **205** patients' samples were collected.

LABORATORY STUDY

- First, sera samples were tested in Diyarbakir Regional Branch Laboratory by EIA method.
- At the beginning, all samples were confirmed by EIA as rubella. But in March 2004 , measles cases were confirmed.
- All samples was sent to Refik Saydam National Hygiene Center , Measles/Rubella Laboratory by in May-2004.
- All samples were recorded, treated and tested according to project draft in June-2004.



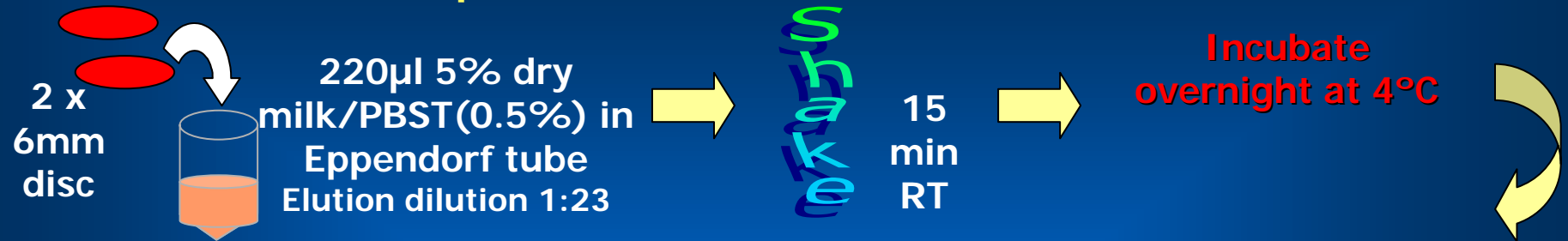
TOTAL NUMBER OF THE TESTED SAMPLES

	Sera	Dried blood	Oral fluid	Total
Measles	119	106	127	352
Rubella	86	92	72	250
Total	205	198	199	602

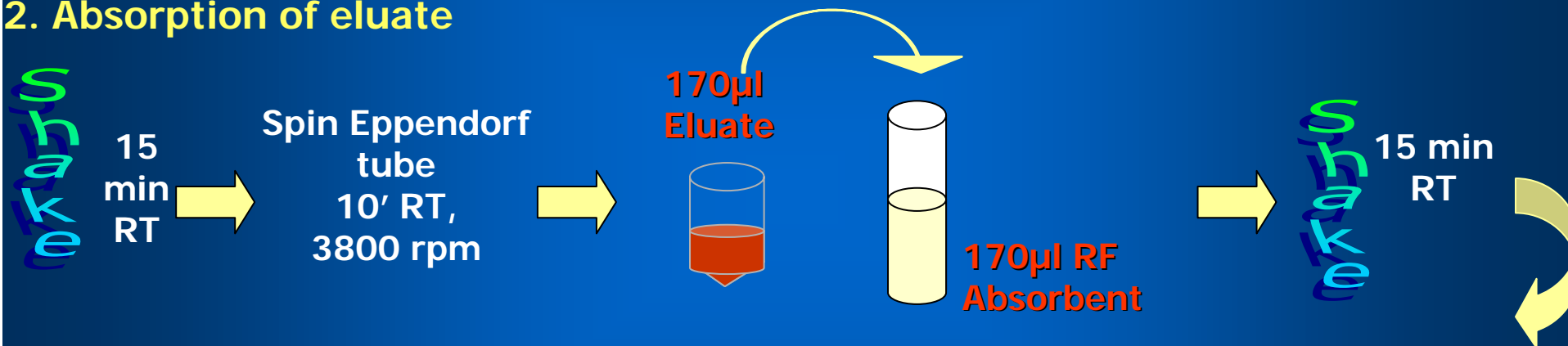
Dried Blood And Filter Paper Alternative Sampling Techniques

Elution of dried blood spots for Behring Measles IgM assay

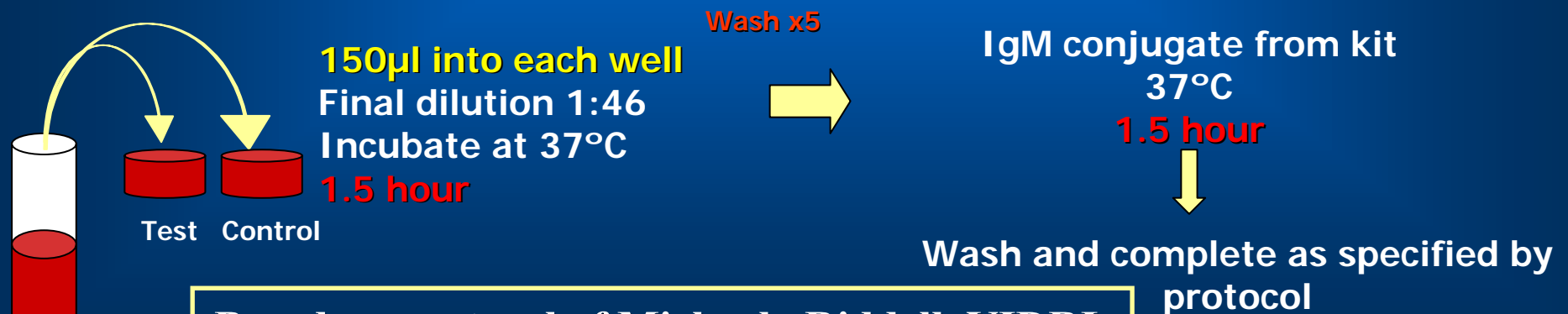
1. Elution of dried blood spot



2. Absorption of eluate



3. Immunoassay – Dade Behring Enzygnost® Anti-Measles-Virus/IgM



Based on protocol of Michaela Riddell, VIDRL

Dried Blood Preliminary Results

Turkey Study:

Summary of **Rubella-IgM** Results in Dried Blood Filter Paper / Serum Sample **with ODs** (Dade Behring^R, N=65)

Serum

	IgM+	IgM-	Indeterm.
Dried blood IgM+	35	0	0
IgM-	1	20	4
Indeterm.	5	0	0

True Concordance: = 55/65 = 84.6%

Rel. Sensitivity = 35/36 = 97.2%

Rel. Specificity = 20/20 = 100%

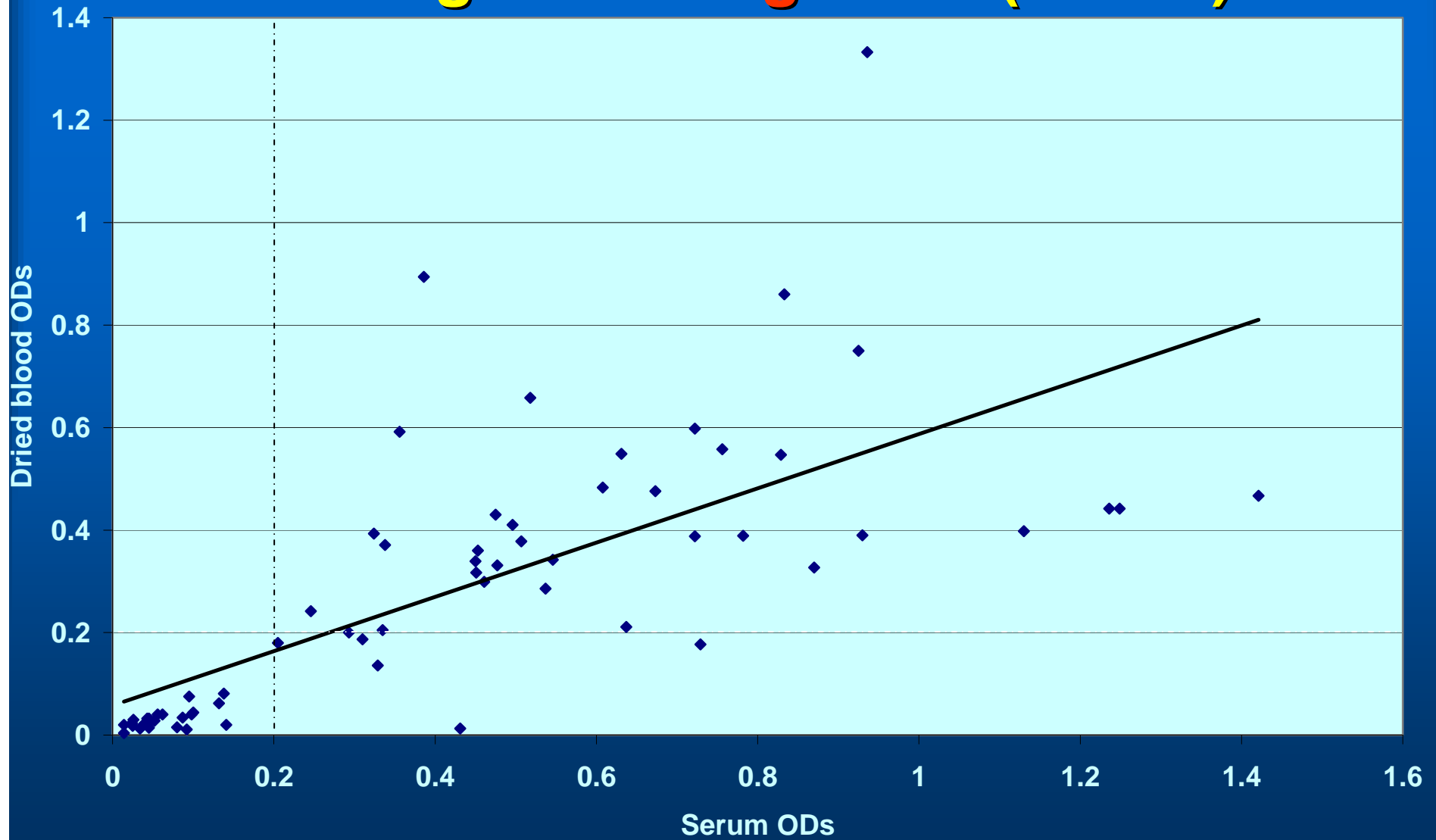
Pos. Pred. Value = 35/35 = 100%

Neg. Pred. Value = 20/21 = 95.2%

Indeterminates ignored

Results as of July 04

Turkey Dried Blood vs. Serum Behring Rubella IgM EIA (N = 65)



RESULTS July 04

Turkey Study:

Summary of Measles-IgM Results in Dried Blood Filter Paper / Serum Sample ODs (Dade Behring^R, N=98)

Serum

	IgM+	IgM-	Indeterm.
Dried blood IgM+	87	0	0
Dried blood IgM-	1	3	0
Dried blood Indeterm.	6	1	0

True Concordance: = 90/98 = 91.8%

Rel. Sensitivity = 87/88 = 98.9%

Rel. Specificity = 3/3 = 100%

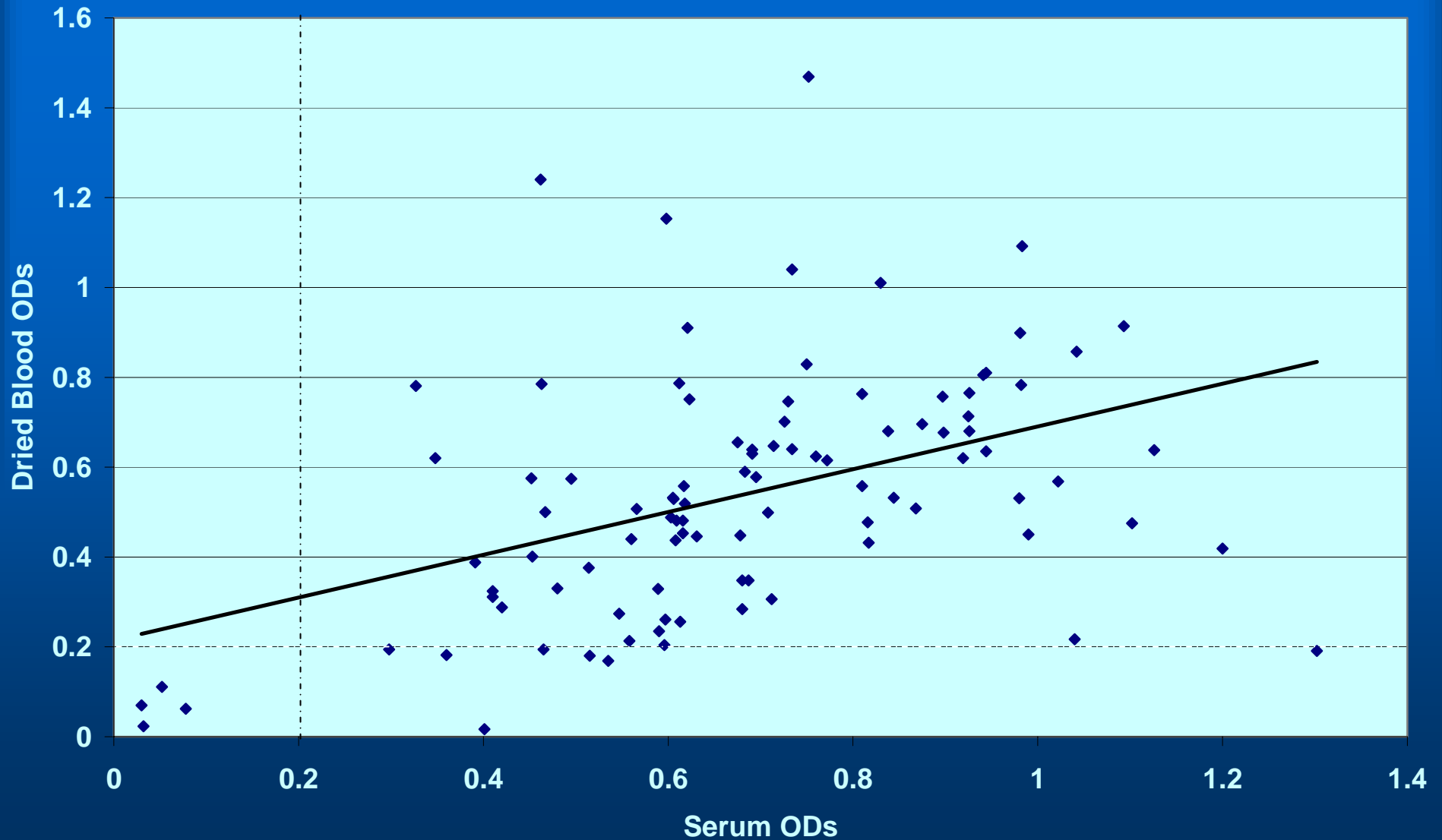
Pos. Pred. Value = 87/87 = 100%

Neg. Pred. Value = 3/4 = 75%

Indeterminates ignored

RESULTS July 04

Turkey Dried Blood vs. Serum Behring Measles IgM EIA (N = 98)



RESULTS July 04

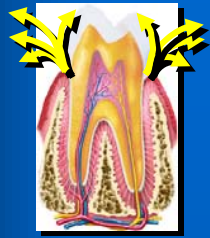
DIFFICULTIES

For Dried Blood

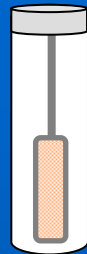
- Volume of 220 μ l 5% dry milk/PBST(0.5%) was not enough. Because some of volume was absorbed by paper discs.

Oral Fluid Preliminary Results

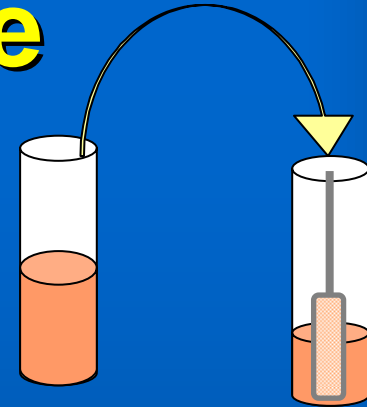
Collection and processing of oral fluid sample



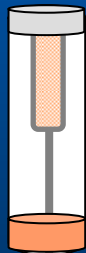
Use Orocol swab like a tooth brush; 1 minute



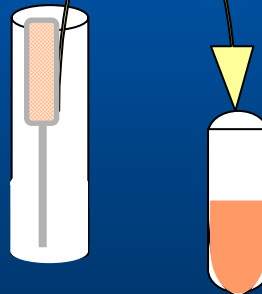
Seal in tube and send to lab



Add 1 ml extraction buffer and mix well



Use forceps to reverse swab and centrifuge 2,000 rpm 5 mins



Discard swab and transfer supernatant to cryovial



Test for IgM, undiluted, in MicroImmune assay

Turkey Study: Summary of **Measles-IgM** Results in Oral Fluid / Serum Sample (Microimmune^R / Dade Behring^R, N= 114) **ODs**

Serum

	IgM+	IgM-	Indeterm.
Oral fluid IgM+	94	0	0
IgM-	2	11	1
Indeterm.	6	0	0

True Concordance: = 105/114 = 92.1%

Rel. Sensitivity = 94/96 = 97.9%

Rel. Specificity = 11/11 = 100%

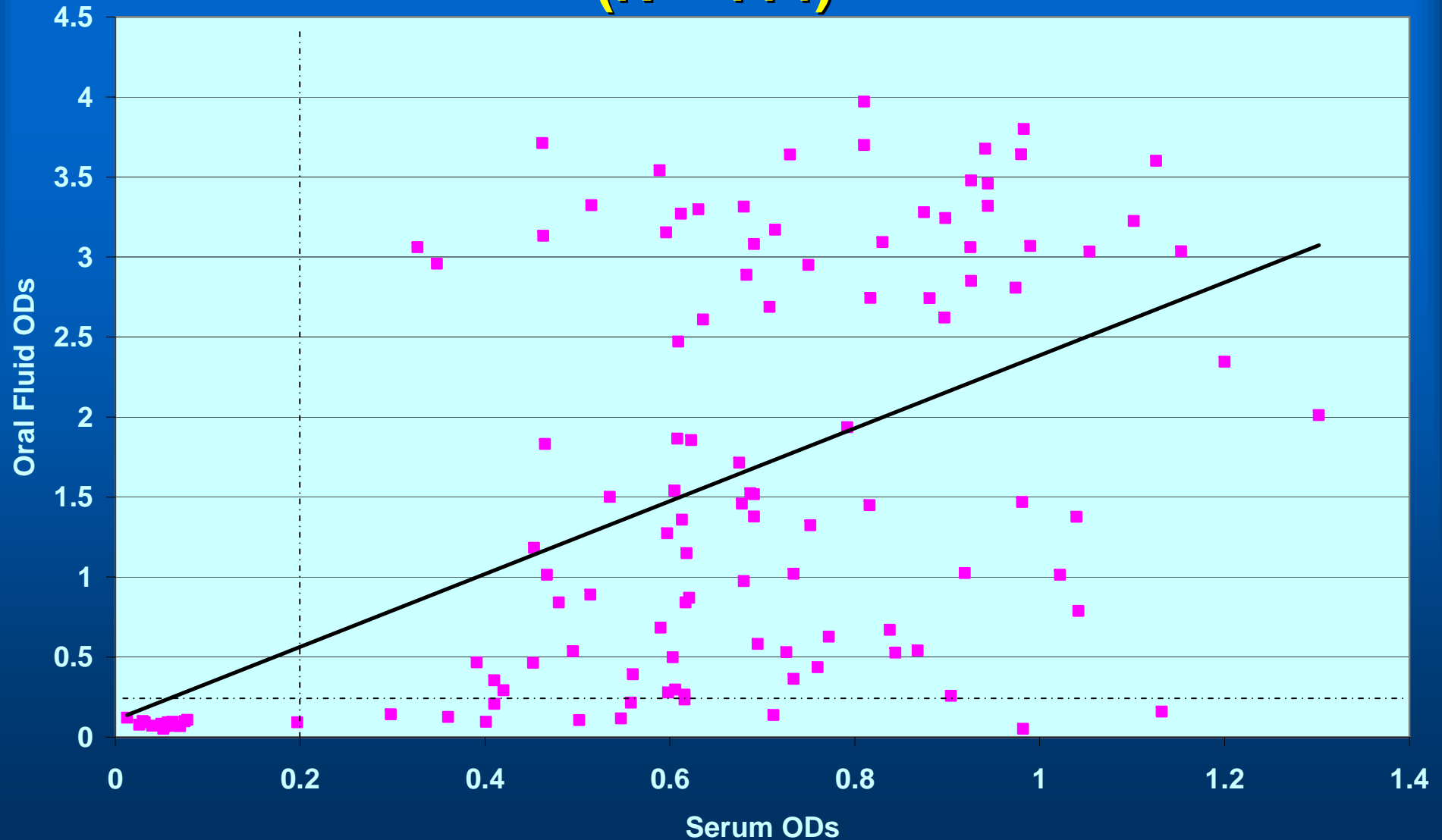
Pos. Pred. Value = 94/94 = 100%

Neg. Pred. Value = 11/13 = 84.6%

Indeterminates ignored

RESULTS July 04

Turkey study: Oral fluid vs. Serum Microimmune / Behring Measles IgM EIA (N = 114)



RESULTS July 04

DIFFICULTIES

For OF

Centrifuge: We could not use 2000 rpm during preparation of oral fluid samples. Because lids were flying off. We applied 1000 rpm 15 min.

CONCLUSION

Dried blood

Advantages:

- Collection,
 - Record,
 - Transportation,
 - Storage of samples
- is the easiest way
- PCR can be studied

Disadvantages:

- Preparation step is necessary and takes time.

CONCLUSION

Oral Fluid

Advantages:

- Collection of samples is not invasive
- Record, transportation and storage of samples is easier than sera samples

Disadvantages:

- Preparation step is necessary
- Cost of the EIA kit

CONCLUSION

Sera

Advantages:

- Using for multiple purposes
- No need for preparation step
- No need for specific EIA kit

Disadvantages:

- Collection of samples is invasive
- Transportation of samples is difficult

THANK YOU