

1 Fig S1. Classification scheme of suspected cases not included in the receiver operating characteristic (ROC) analysis which were evaluated
2 by the measles neutralizing antibody cut-off ($\geq 40,000$ mIU/mL). The cRICs (confirmed reinfection cases) included serum specimens from
3 cases with high avidity measles IgG antibody and concentrations $\geq 40,000$ mIU/mL. The probable reinfection cases (pRICs) had
4 concentrations $\geq 40,000$ mIU/mL but measles IgG avidity results were inconclusive (not available or intermediate).

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6 Fig S2. Comparison of concentrations of measles antibodies determined by plaque reduction neutralization (PRN) (mIU/mL) for serum
7 specimens from the confirmed reinfection cases (cRICs) and probable reinfection cases (pRICs). The geometric mean concentration (GMC)
8 was calculated for all serum samples collected from cases in both groups. N=number of cases. The half-shaded shapes denote the
9 concentrations of measles antibody from the first and second serum samples collected from 3 of the pRICs.

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27 Table S1. Description of samples and characteristics of suspected measles cases (Fig. 4, two groups of unknowns) classified as either cRICs
 28 (PRN concentration \geq cut-off for RIC, high avidity IgG measles antibody) or pRICs (PRN concentration \geq cut-off, measles IgG avidity
 29 inconclusive or not done)

Designation of unknowns with PRN concentration $\geq 40,000$ mIU/mL N=45	Days ^a (median)	IgM Positive ^b (%)	Known contact with case (%)	Associated with outbreak &/or travel (%)	Known source for additional case(s) (%)	MMR history ^c
cRICS N=17	0-34 (8)	13 (76)	10 (59)	16 (94)	3 (18)	11 (65)
pRICs N=8	1-17 (4)	4 (50)	6 (75)	7 (88)	0 (0)	4 (50)

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31 PRN, plaque reduction neutralization; cRIC, confirmed reinfection case; pRIC, probable reinfection case; MMR, measles, mumps, rubella.

32 ^a Interval, in days post rash onset, for serum collection.

33 ^b Cases with a positive IgM result by CDC measles IgM capture assay (≥ 1 serum sample with positive IgM result).

34 ^c Receipt of ≥ 1 dose of MMR vaccine according to case investigation.

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Table S2. PRN concentrations, IgM results, and PRN fold titer change for RICs with 2 serum samples collected

Case #	Serum 1			Serum 2			Interval in days S1 to S2 ^c	Fold titer increase or NSC
	Day ^a	PRN (mIU/mL) ^b	IgM result	Day ^a	PRN (mIU/mL) ^b	IgM result		
1	<u>-7</u>	<u>12</u>	N	10	109,423	P	17	9,118
2	1	594	N	5	192,035	P	4	323
3	2	881	N	7	119,287	N	5	135
4	0	551	N	6	66,258	P	6	120
5	2	714	N	5	84,631	N	3	118
6	0	1,367	N	4	150,219	P	4	110
7	0	1,048	N	4	56,178	N	4	54
8	0	2,253	N	10	115,664	P	10	51
9	0	8,306	N	4	249,831	N	4	30
10	2	4,898	P	14	120,578	P	12	25
11	0	2,022	P	<u>2</u>	<u>50,687</u>	P	2	25
12	2	2,884	IND	8	62,429	P	6	22
13	0	612	N	<u>2</u>	<u>11,572</u>	N	2	19
14	0	5,674	N	6	107,652	P	6	19
15	1	5,648	N	30	77,935	N	29	14
16	0	848	N	4	11,695	P	4	14
17	1	12,267	P	5	161,058	P	4	13
18	1	12,807	N	5	163,992	N	4	13
19	1	8,069	P	25	95,253	P	24	12
20	1	15,385	IND	6	144,574	P	5	9

21	1	13,032	N	5	117,169	P	4	9	39
22	2	16,644	P	8	123,844	P	6	7	40
23	0	17,066	N	22	122,306	P	21	7	41
24	1	36,919	IND	4	257,514	P	3	7	41
25	1	25,159	N	12	148,459	N	11	6	42
26	2	15,026	P	6	88,988	P	4	6	43
27	2	81	P	9	402	P	7	5	44
28	1	32,724	N	6	156,288	N	5	5	44
29	1	38,725	P	6	168,958	P	5	4	45
30	0	59,914	P	10	181,253	P	9	3	46
31	3	87,155	P	6	221,291	P	3	2.5	47
32	3	94,860	N	7	171,632	N	4	2	47
33	6	4,552	N	24	3,579	N	18	NSC	48
34	6	83,004	P	13	58,015	P	7	NSC	49

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52 PRN, plaque reduction neutralization; RIC, reinfection case; P, positive; N, negative, N; IND, indeterminate; NSC, no significant change

53 ^a Day of collection; all are post rash onset except for patient #1. The S1 serum was collected after exposure to a measles case, 7 days prior to
54 rash onset. Collection days shown with underline did not meet time interval requirement for ROC analysis (all serum samples analyzed were
55 post-rash; second serum (ROC-2) collected at ≥ 3 days post rash).

56 ^b Concentration of measles neutralizing antibody determined by PRN in mIU/mL

57 ^c S1, serum 1; S2, serum 2

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