



Background

- Improving vaccination coverage among children of migrant workers is an important strategy for achieving measles elimination goal in 2012.
- July 6, 2010: Parents of a confirmed measles patient in Village A reported several similar patients in the same village.



Migrant Workers: Farmers who go to cities to look for jobs during non-farming seasons
 - Mostly from poor areas
 - Low literacy level

Objective

- To investigate cause for this outbreak and risk factors for transmission.
- To provide recommendations for improving measles elimination strategies.

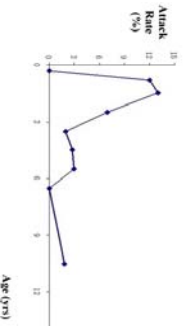
Methods

- Case definition**
 Suspected case: Onset of fever and rash among a resident of Village A and neighboring villages during June 1 to August 3, 2010.
 Confirmed case: A suspected case with measles-specific IgM identified in serum.
- Case finding**
 - Door-to-door visits in Village A.
 - Searched the China Information System for Disease Control and Prevention for case-finding.
- Retrospective cohort study**
 Among children of migrant workers aged 8mos-14yrs to identify risk factors for measles infection.

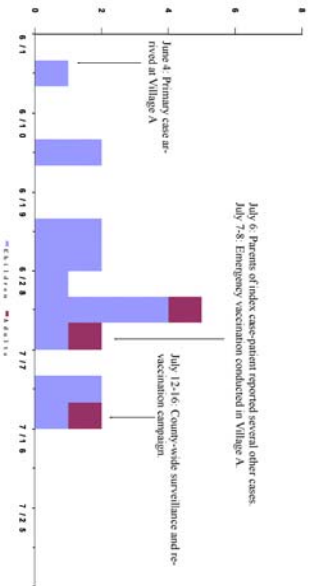
Results

Symptoms of 19 measles cases (only 2 were reported)

Symptoms	N. of cases	Proportion(%)
Fever	19	100
Rash	19	100
Cough	19	100
Catarh	16	84
Conjunctivitis	16	84
Koplik's spots	8	42



Epidemic curve indicated several generations of transmission



- All cases had been treated at 3 private clinics.
- All 3 private clinics were unlicensed.
- The doctors did not report the measles cases.



81% of children of migrant workers aged 8mos-14yrs had been vaccinated before this outbreak

Vaccinated	No. cases	Population	Attack Rate (%)	RR(95%CI)*	VE (95% CI)**
Yes	0	254	0	0(0-0.05)	100 (95-100)
No	16	45	26	ref	

* Fisher Exact CI
 ** Vaccine Effectiveness = (1-RR) * 100%

- 12 of 16 (75%) cases had lived in Village A for >3 mos.
- Parents of 9 of those 12 of those still did not know their children needed to be vaccinated.
- Only one government-paid physician was visiting migrant workers' household in Village A, 4 evenings every month, to provide preventive services.

Among unvaccinated children, those who had close contact with measles patients were 20 times as likely to be infected than those who did not.

Stratified analysis:

Vaccinated	Contact with case-children*	No. cases	Population	Attack rate (%)	RR	95%CI**
Yes	Yes	0	4	0	0	0-17
Yes	No	0	250	0	0	0-0.35
No	Yes	14	16	87	20	5.7-94
No	No	2	45	4.4	Ref	

* Lived together, played or talked with measles case-children
 ** Fisher Exact CI



- Children of migrant workers:
 - Had poor living conditions
 - Had frequent contact with each other

Limitation

- Only parents of case-children (not all migrant workers) were asked why they were unvaccinated.

Conclusions

- Cause of this outbreak: Low measles vaccine coverage among children of migrant workers.
- Delayed reporting contributed to this outbreak.
- Contact with other children was a risk factor for measles transmission.

Recommendations

- Improve immunization services for children of migrant workers.
- Strengthen measles surveillance among children of migrant workers.

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Contact: Ms. Jie Gao (xiaojusmart@163.com)