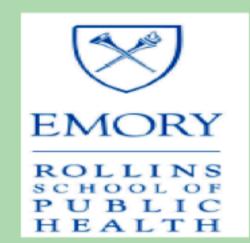


Measles Trends In The Kingdom Of Saudi Arabia, 2002 – 2012

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Introduction

- Measles is a highly viral infectious disease that can cause severe illness, permanent complications and death.
- The extensive use of the measles vaccine since 1980 has led to a significant decrease in global morbidity and mortality.
- Measles prevention efforts in the Kingdom of Saudi Arabia (KSA) are divided into two main phases: the control and elimination phases.
- The control phase was started in 1974 with the introduction of a single measles vaccine dose (Schwarts) that targeted children from 1-9 years old.
- The elimination phase started in 1998 and has continued to the present. In 2001, the introduction of lab confirmation strengthened the measles surveillance system.
- •The official target date to eliminate measles in the KSA is 2015.

Objectives

- To describe the distribution and track the annual incidence rates (IR) of measles in all 13 provinces of KSA from 2002 – 2012.
- •To give policymakers a clear picture of how to improve measles surveillance and accelerate elimination efforts.

Methods

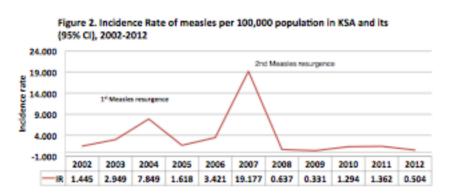
Trends in the annual measles IR in KSA were determined and described by age, gender, nationality, province, month, and immunization status using the national measles notification data reported to the Ministry of Health by all 13 provinces from 2002 – 2012.

Figure 1. Administrative provinces in the Kingdom of Saudi Arabia.



Results

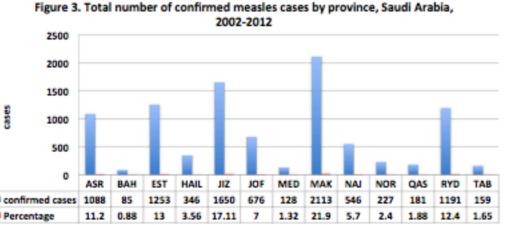
The national measles IR showed a slight decline over a period of 11 years with two epidemic spikes in 2004 and 2007 (Fig. 2).



In general, Saudi nationals were more affected by measles than non-Saudis, except in 2005 (Table. 1).

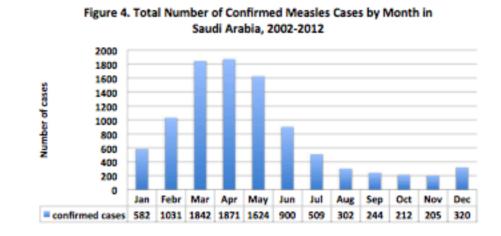
Table 1.	Measles incidence rate per 100,000 population by nationality and year in KSA			
Year	Saudi		Non-Saudi	
	IR	95% CI	IR	95% CI
2002	1.97	(1.27, 2.66)	0.05	(-0.13, 0.23)
2003	3.73	(2.79, 4.68)	0.85	(0.11, 1.59)
2004	9.87	(8.35, 11.39)	2.43	(1.2, 3.67)
2005	1.57	(0.97, 2.17)	1.74	(0.71, 2.77)
2006	4.23	(3.26, 5.20)	1.23	(0.37, 2.09)
2007	25.03	(22.7, 27.36)	3.37	(1.97, 4.78)
2008	0.83	(0.41, 1.25)	0.11	(-0.14, 0.35)
2009	0.39	(0.11, 0.68)	0.16	(-0.14, 0.46)
2010	1.42	(0.89, 1.96)	0.95	(0.22, 1.67)
2011	0.53	(1.16, 2.33)	0.32	(-0.09, 0.74)
2012	0.53	(0.21, 0.85)	0.44	(-0.04, 0.92)

Most of the measles cases occurred in the provinces of Makkah (21.9%), Jizan (17.1%), Eastern region (13%), Riyadh (12.4), and Aseer (11.2%) (Figure 3).



The bulk of cases (66%) were reported between February and May (Figure 4).

Results



Almost all provinces showed a decrease in the measles incidence rate except for Madinah, which experienced a continuous increase in the IR from 2010 - 2012 (Fig. 5).

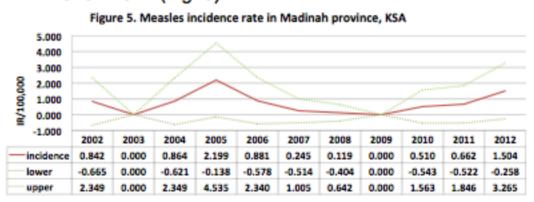
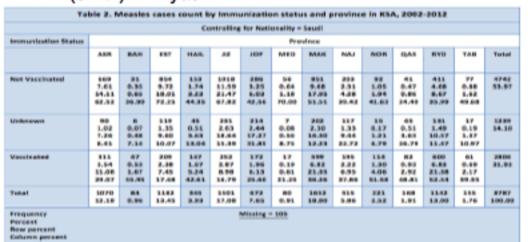
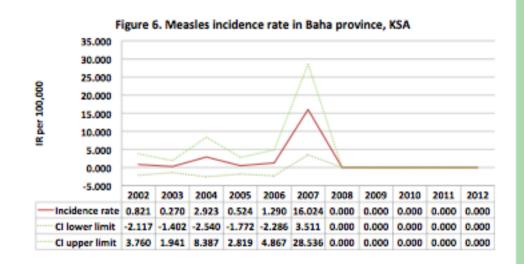


Table 2 shows that 4,742 (54%) of the measles cases among Saudi nationals occurred among the non-vaccinated group: 1,018 (21.5%) were in Jizan; 854 (18%) in the Eastern Province; 851 (17.95%) in Makkah; 669 (14.1%) in Aseer; and 411 (8.7%) in Riyadh.



Baha province reported no measles cases from 2008 until mid-2012 (when the study period ended), and Joof province reported none from 2011 through the end of the study period (Fig. 6). Hail and Qassim reported no cases in the first four months of 2012.

Results



Discussion

Measles rates from 2002 – 2012 showed a slight decrease, but epidemics still occurred approximately every 3 years. The resurgence of measles could be due to an accumulation of susceptible cases among those in the vulnerable age group of 0-14 years in highly populated provinces like Makkah, Riyadh, Eastern Province, Aseer and Jizan.

Makkah is a challenge because of the Hajj, the biggest mass gathering in the world, during which an estimated 2-3 million pilgrims travel there each year. Sustainable elimination has been achieved in Baha province; it is the only province that was free of measles from 2008 to the end of the study period in 2012.

Recommendations

- Because the measles vaccine is safe, effective, and inexpensive (costing less than one U.S. dollar), we recommend adding the measles vaccination to the list of required vaccinations before issuing Hajj or work visas.
- We recommend data registry training sessions for those who are working on measles surveillance so that the data will be clearer, more readable, and more complete.
- •Also, we recommend paying more attention to the vaccination process in Makkah, Riyadh, Jizan, Eastern Province, and Aseer because these provinces have the greatest number of cases.
- •Finally, though KSA is moving toward measles elimination by 2015, we need greater political and public health commitment to achieve this goal.