Update on Mumps Outbreak: Arkansas

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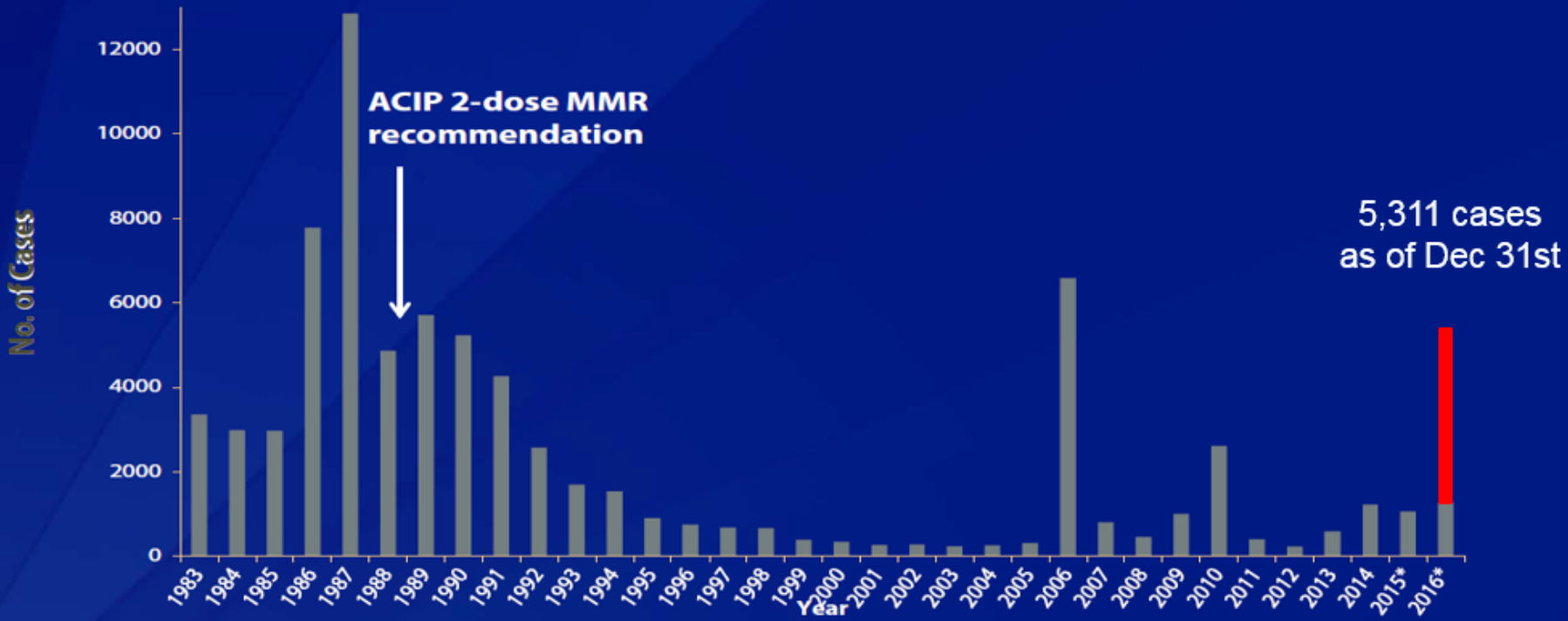
Mumps Cases, United States, 1983-2016*

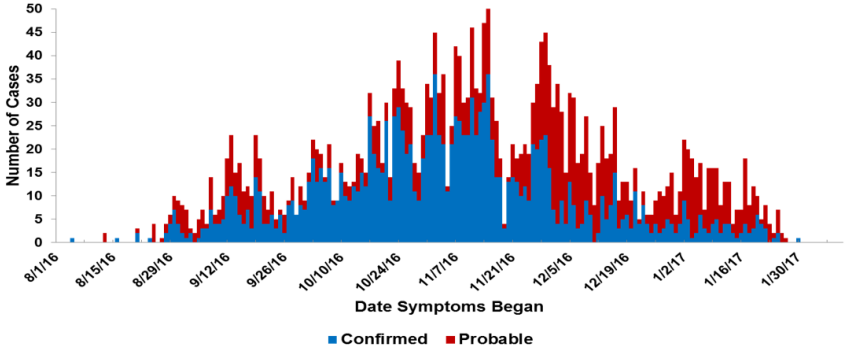


*2015 cases as of Jan 2, 2016. 2016 case count preliminary as of June 6, 2016 and subject to change.

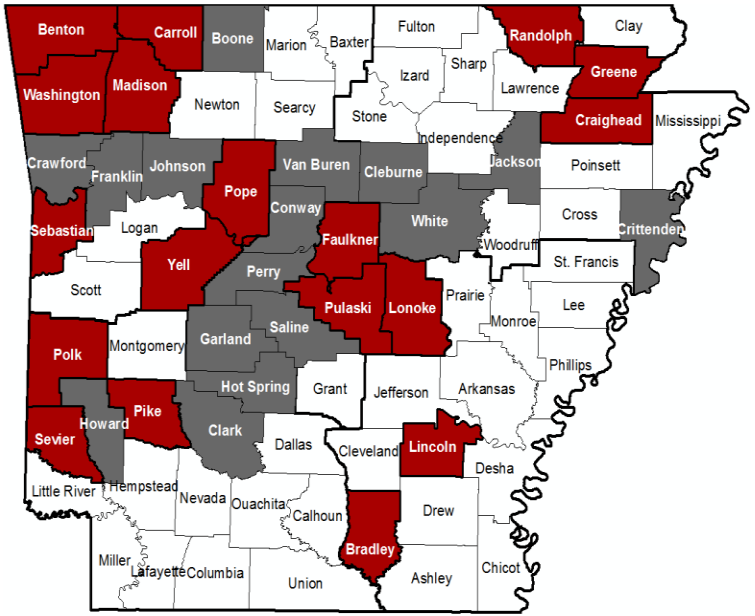
Reported Cases of Mumps, Arkansas 2016-17

While initially disproportionately affecting the Marshallese population and school-aged children in NW Arkansas, the outbreak has involved over 30 Arkansas counties and all races, ethnicities, and ages. Cases have occurred in more than 107 schools, 116 churches, and 160 workplaces. Non-Hispanic whites are now the most impacted population.

Still having about 5-10 cases per day, down from about 50 per day. But we are now seeing cases in many other counties around the state



Mumps cases under investigation counties affected (February 1, 2017)

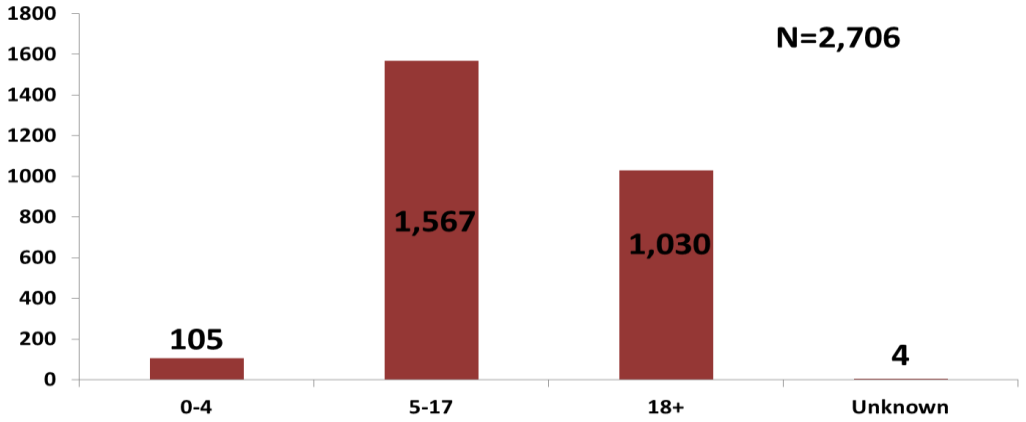


Active (Cases Within 26 Days) **(18)**

Inactive (No Cases Within 26 Days) **(15)**

No Cases **(40)**

Total mumps cases under investigation by age (February 1, 2017)

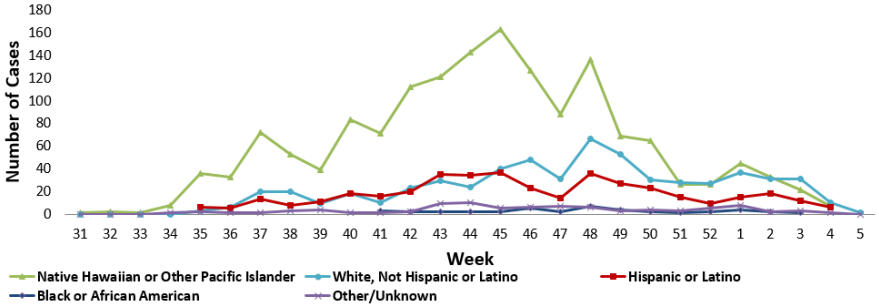


Mumps Cases	Total Amonunt
0-4	105
5-17	1,576
18+	1,030
Unknown	4

N=2,706

Number of Cases

Race/Ethnicity	Confirmed	Probable	Total	Percent
Native Hawaiian or Other Pacific Islander	999	582	1581	58%
White, Not Hispanic or Latino	262	333	595	22%
Hispanic or Latino	216	185	401	15%
Black or African American	20	21	41	2%
Other/Unknown	44	44	88	3%
Total	1541	1165	2706	100%











Vaccination Status of Cases

Vaccination Status of Cases	Age group <1	Age group 1- 4	Age group 5-17	Age group 18+	Age group Total
0 MMR	9	35	76	614	738
1 MMR	0	38	44	106	188
2+ MMR	0	23	1,438	306	1,767
Total	9	96	1,558	1,026	2,693
Total Up-to-date	0	61	1,438	412	1,911
% Up-to-elate	N/A	63.5%	92.3%	40.2%	71.0%

There are 80 more cases under investigation whose vaccine status is not known









Observed vs. Expected Complications

Age Groups

Complication	% Pre vaccination	% Post-vaccination	Approximate Number Expected with 2,500 cases	Number Observed as of 1/10/17
Meningitis	1-10%	<1%	25-250	0
Encephalitis	0.5%	<1%	12-25	0
Orchitis	20-40% of men	10%	125-500	16
Oophoritis	5% of women	<1%	62	0
Pancreatitis	2-5%	<1%	50-125	1
Deafness	0.005%	rare	12	0
Infertility	4% of men	rare	50	0
Hospitalization	10%	2%	50-250	3

Prolonged PCR Positivity

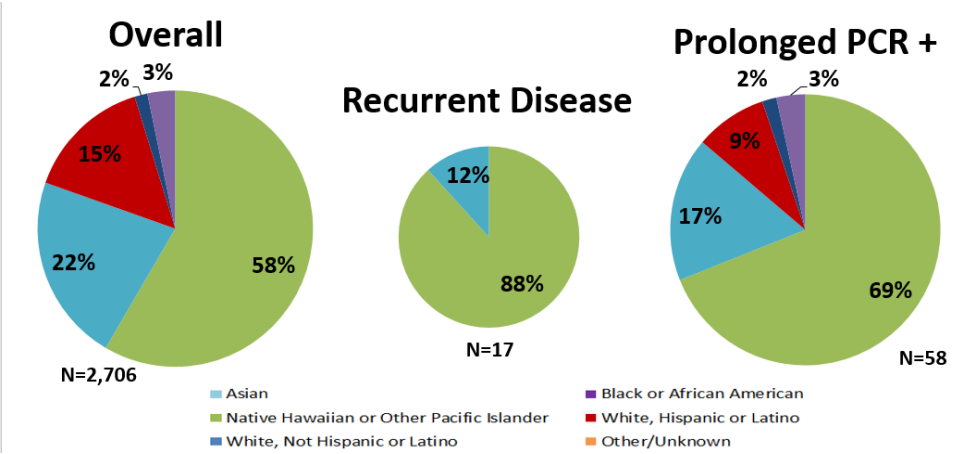
- 58 cases confirmed by PCR greater than 5 days after parotitis onset
- Age range 2-46 years
- 69% Marshallese
- 57% Female

Recurrent Disease

- 17 cases with recurrent onset of clinical parotitis
  - 14 days to 118 days after first episode, average 52 days
- Age range 7-25 years
- 88% Marshallese
- 65% female
- 16 had 2 doses of MMR, 1 had 1 dose

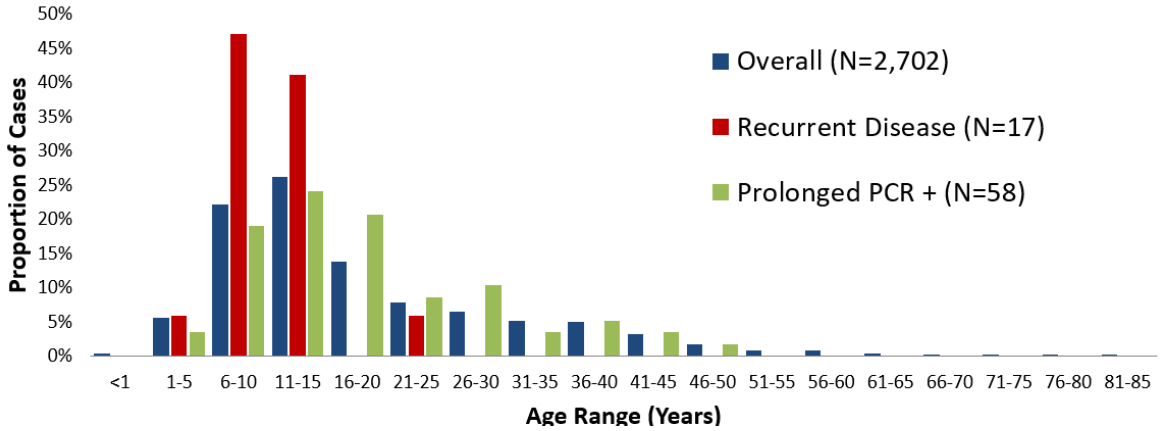
Mumps Cases by Race

Cases by Race	Overall N=2,706	Recurrent Disease N=17	Prolonged PCR + N=58
Asia	22%	12%	17%
Native Hawaiian or Pacific Islander	58%	88%	69%
White, Not Hispanic or Latino	2%		2%
Black or African American	3%		3%
White, Hispanic or Latino	15%		9%
Other/Unknown			



Cases by Age

Chart describing the Age Range (Years) and Proportion of Cases from <1 to 81-95
Overall (N=2,702)
Recurrent Disease (N=17)
Prolonged PCR = (N=58)



MMR Clinics

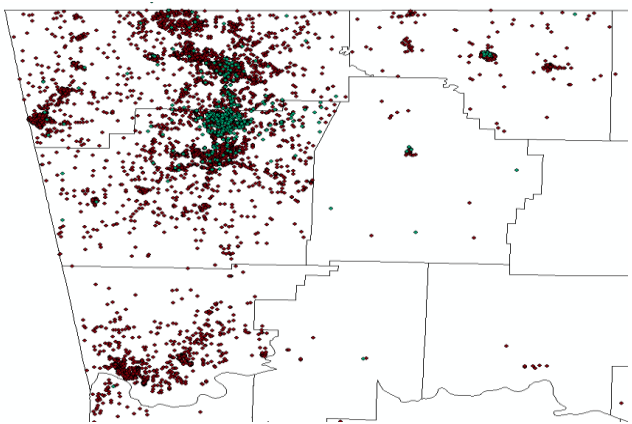
- ADH has conducted 47 community, church, employer, and school-located clinics.
- Piloting efforts to bring vaccine house-to-house
- Most of the clinics are to get people up to date with age-appropriate vaccination
- A subset of clinics are providing a 3rd dose ‘booster’ in settings with ongoing transmission

MMR Clinics – Feb. 1, 2017

Doses	Setting	Percent
2,950	Schools	40%
187	Churches	3%
2,601	Worksites	35%
459	ADH Clinics	6%
1,122	WCHD Mass MMR Clinics	15%
85	Residence (Apts/Homes)	1%
18	Grocery Stores	<1%
7,422	**TOTAL**	

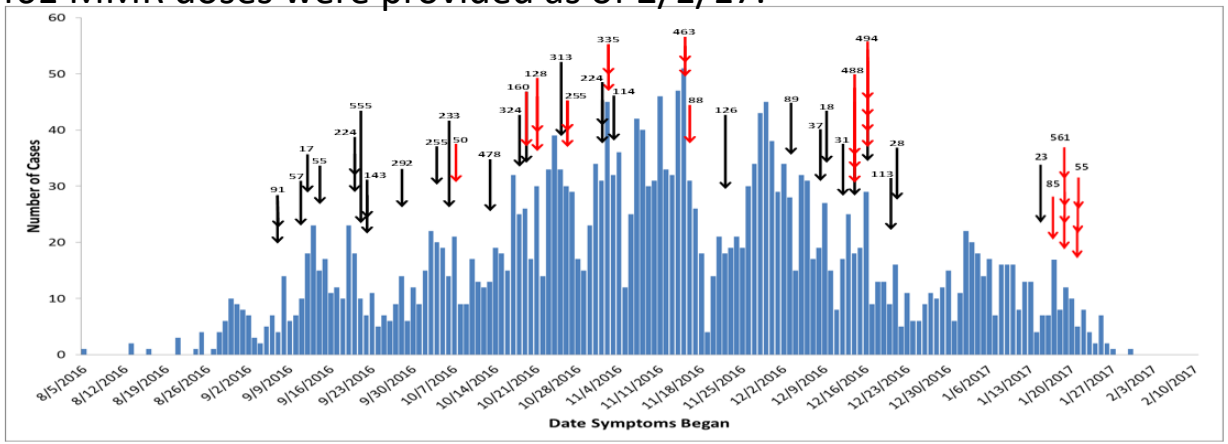
MMR Vaccination and Case Distribution in NW Arkansas Since September 2016

This map shows the geographic distribution of MMR vaccinations and mumps cases in Northwest Arkansas. There is a strong overlap between vaccinations and cases, indicating that the MMR vaccination program was targeted to the populations at highest risk.



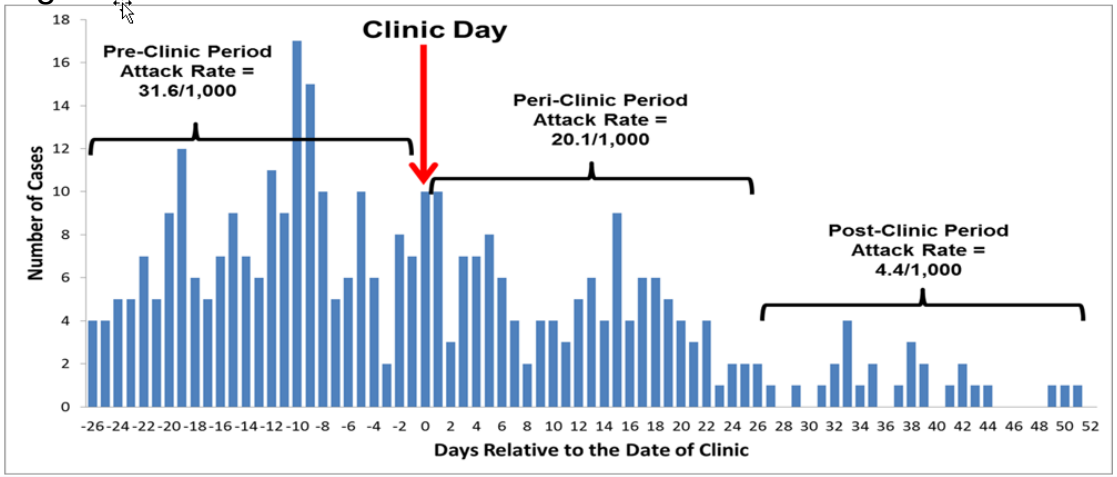
Arkansas Mumps Cases and MMR Clinics: 2/1/17

This graph shows the distribution of Arkansas mumps cases in time from August 2016 through January 2017. The dates of MMR vaccination clinics are indicated with arrows and the numbers above the arrows indicate the number of doses given at each of the 56 MMR clinics. Red arrows represent 3rd dose clinics. A total of 7461 MMR doses were provided as of 2/1/17.



Rates of Mumps in 9 Schools Before and After Clinics

This graph shows the number of mumps cases by day relative to the date of MMR vaccination clinic at 9 Arkansas schools. In the 26 days before the clinic, the mumps attack rate was 31.6/1000 population. In the 26 days after the clinic, during which incubating cases would have become patent, the attack rate was 20.1/1000. Beyond 26 days (one incubation period for mumps) after the clinic, the attack rate dropped to just 4.4/1000. These findings suggest that the MMR vaccination clinics may have contributed to the dramatic decrease in mumps attack rate among these schools.



Does the Booster help?

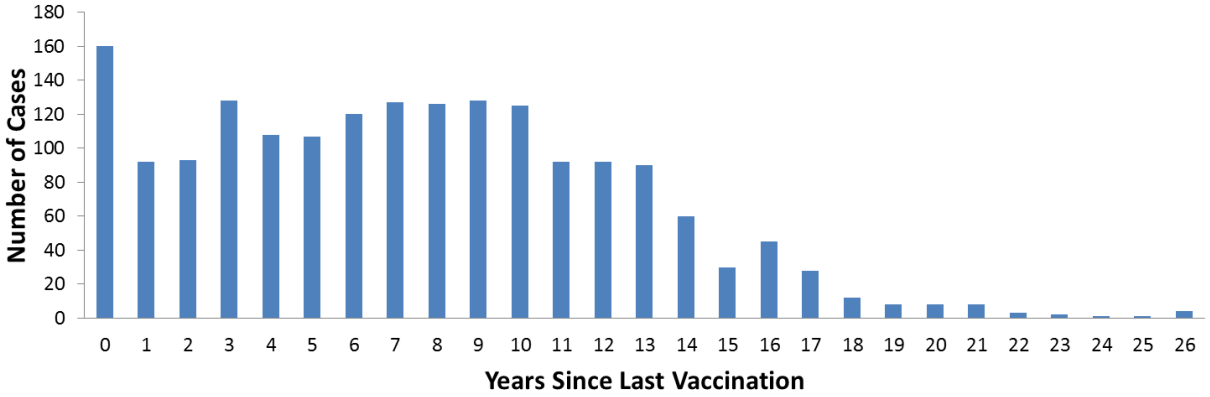
Note: This analysis is restricted only to students in the 9 schools who already had two MMR doses

Mumps Before and After MMR Clinics

Pre-Clinic Rate of Mumps	Results of Clinic	Rate (Count) of Mumps From 1-26d After Clinic	Rate (Count) of Mumps From 27-52d After Clinic
34.6 (194)	743 Students Received 3rd Dose Booster	29.6 (22)	0 (0)
34.6 (194)	4,663 Did Not Receive 3rd Dose Booster	19.7 (92)	5.7 (26)

No indication of waning of vaccine protection

This graph shows the number of mumps cases by the number of years since last MMR vaccination. The numbers of cases are similar from 0 to 10 years after vaccination and then progressively decline from 11 years on. If waning immunity to the MMR vaccination were a significant risk factor for mumps in this outbreak, then we would have expected an increase in the number of cases as the number of years since vaccination increased. The data in this graph provide no indication of waning vaccine protection.



Communication Challenges

- Massive outreach effort
- Different messages work for different audiences
- Stakeholders have varied perspectives, goals, and needs
- Multipronged and repetitive approach needed

What is ADH Doing?

- Using the best evidence available
- Interviewing suspect cases and contacts
- Excluding under-vaccinated kids from school
- Performing vaccination clinics in many different settings
- Providing advice to providers, schools, employers, and parents
- Evaluating our control efforts and contributing to the understanding of mumps
- Communicating to many audiences

Acknowledgements

- Thanks to all involved in the outbreak response!
  - ADH staff, CDC staff, RMI Ministry of Health, Marshallese Task Force, ARCOM, UAMS, community leaders, and more
- Thanks specifically to Dr. Dirk Haselow, Dr. Haytham Safi and Ms. Virgie Fields who helped create the slides