

Master of Public Health
Integrative Learning Experience Report

***MODEL VACCINE POLICY FOR COLLEGES AND
UNIVERSITIES***

by

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MASTER OF PUBLIC HEALTH

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Summary/Abstract

College campuses, due to group living and close contact through classes, athletics and social settings, are at risk for outbreaks of vaccine-preventable diseases.

Due to costly outbreaks that spread beyond campus borders, there is a public interest in colleges adopting comprehensive vaccine policies. Under Kansas law each state university is required to have in place policies and procedures requiring incoming students residing in student housing to be vaccinated against meningococcal disease. This requirement applies only to meningococcal disease and only to the six state universities in Kansas; it does not apply to private colleges, private universities or community colleges.

The Immunize Kansas Coalition, a group of researchers, health department officials, educators and providers working together with the Kansas Health Institute, sought to create a comprehensive model vaccination policy to share and promote among colleges and universities in Kansas.

This project includes a survey of current vaccination policies at 55 universities and colleges within the state of Kansas and key informant interviews with stakeholders in health departments, universities, community colleges and private colleges to inform this model vaccine policy.

Subject Keywords: Vaccines Immunization Kansas College Outbreak Universities

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Chapter 1 – Literature Review

Vaccinations are one of public health's greatest achievements, having greatly reduced the incidence of infectious diseases since the first smallpox vaccine became available at the end of the 18th century (Rappuoli, Pizza, Giudice, & Gregorio, 2014).

Despite this achievement, outbreaks of vaccine-preventable diseases still occur, including outbreaks on college and university campuses. College and university campuses are at higher risk for outbreaks of vaccine preventable diseases (VPDs) due to students living in close quarters in dormitories and other group living situations, and often engaging in certain behaviors in social settings that create risk for communication, such as sharing drinks ("Meningococcal Disease and College Students," 2000).

Campus outbreaks are costly for universities and state health departments, requiring work hours from health professionals, epidemiologists, and more (Marin et al., 2018) (Pike et al., 2019). These outbreaks also spread beyond campus borders, sparking greater public interest in colleges adopting comprehensive vaccine policies.

Immunization policies for childcare and primary schools exist in all 50 states ("States With Religious and Philosophical Exemptions From School Immunization Requirements," 2019.), colleges and universities however are largely ignored by state policies. The American College Health Association (ACHA) views post-secondary school as the last opportunity to recommend or require vaccinations for people before they graduate. It benefits everyone to have graduates up-to-date on recommended immunizations in order to lesson opportunities for outbreaks of vaccine-preventable diseases. Herd immunity, the level of vaccination required in a community to resist the spread of a disease, requires communities to maintain high vaccination levels. For measles, a disease so contagious that droplets from an infected person remain infectious in the air and on a surface for up to 2 hours, herd immunity is achieved at or above 90% vaccination rate. Herd immunity ensure that fewer people could contract the disease, and thus there are fewer people to transmit it to others, effectively stopping an outbreak before it can occur.

The state of Kansas maintains a limited vaccination policy in its public universities, but those only account for a small number of post-secondary schools even if it is a large portion of

students. It also only addresses meningitis and only in student housing, leaving many students at risk for outbreaks (Roush, Murphy, & Group, 2007) (Huang et al., 2009).

This project explores the policies in every accredited post-secondary school in the state of Kansas, as well as the concerns and challenges to adopting a vaccine policy as seen by health services representatives.

Vaccines, Measles and Mumps

Prior to 1957 measles and mumps were so common that people born before 1957 are considered immune (“MMR Vaccination | What You Should Know | Measles, Mumps, Rubella | CDC,” 2019). Now a single case of either disease is considered newsworthy. Table 1.1 shows how cases of vaccine-preventable diseases have decreased in the United States over the last 100 years.

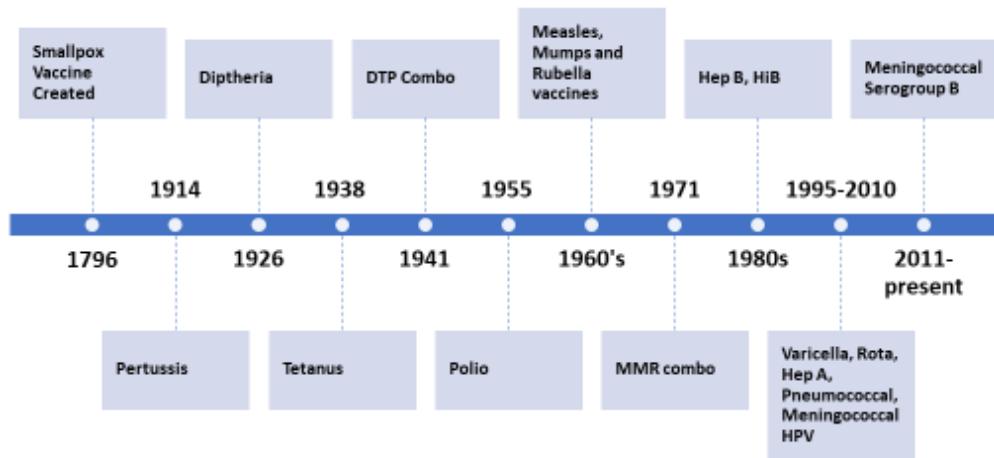
Table 1.1 - Comparison of Pre-Vaccine Morbidity Compared with Post-Vaccine Morbidity of Selected Vaccine Preventable Diseases (Roush, Murphy, & Group, 2007)

Disease	Estimated Avg Cases Pre-Vaccine Cases	Deaths	Estimated Avg Cases Post-Vac. (2006) Cases	Deaths	% Decrease Cases	% Decrease Deaths
Smallpox	29,005	337	0	0	100%	100%
Measles	530,217	440	55	0	99.9%	100%
Mumps	162,344	39	6584	0	95.9%	100%
Diphtheria	21,053	1822	0	0	100%	100%
Pertussis	200,752	4034	15,632	27	92.2%	99.3%
Polio	19,794	1393	0	0	100%	100%
Rubella	47,745	17	11	0	99.9%	100%
Tetanus	580	472	41	4	92.9%	99.2%

Vaccination policies have long been an important strategy for protection against vaccine preventable diseases (Rappuoli, Pizza, Giudice, & Gregorio, 2014). Figure 1.1 shows the timelines of vaccine invention. All 50 states have legislation requiring certain vaccinations for young students (“States With Religious and Philosophical Exemptions From School Immunization Requirements,” 2019.). Kansas currently requires that children in licensed childcare facilities and primary school receive a series of vaccinations that includes Dtap (Diphtheria, tetanus and pertussis), Hib (*Haemophilus influenzae type b*), MMR (measles,

mumps, rubella), polio, hepatitis A, hepatitis B, pneumococcal conjugate, varicella, and for high school, meningococcal quadrivalent vaccine (KDHE, 2018). For students in colleges and universities however Kansas state law requires only that the 6 public universities have policies and procedures requiring students residing in student housing to be vaccinated against meningitis, including appropriate waiver procedures for students who refuse to be vaccinated (Kansas Board of Regents, ch.2).

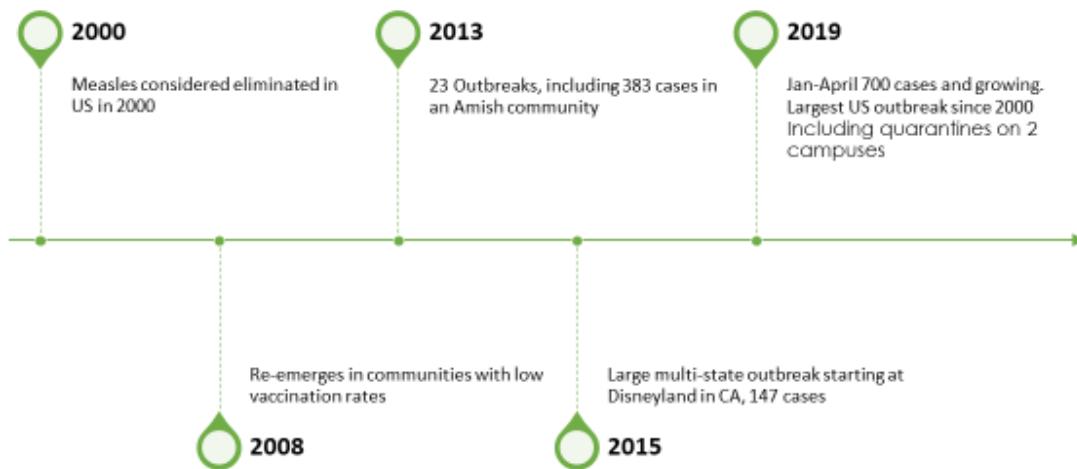
Figure 1.1 - Timeline of Vaccine Invention



According to the U.S. Centers for Disease Control and Prevention (CDC), endemic measles was eliminated in the U.S. in 2000. Measles is still common in some countries in Europe, Asia, the Pacific and Africa. Measles cases in the U.S. are often contracted through travel, however 2008 saw the beginning of a rise in measles cases among communities with low vaccination rates in the US, and there have been reported outbreaks throughout the US during most of the years since. Until 2019, the largest single outbreak in the US occurred in 2014 with 383 cases reported in unvaccinated Amish communities in Ohio ("Measles | Cases and Outbreaks | CDC," 2019). From January 1 through April 26, 2019 close to 700 cases of the measles were reported

across 15 states. This is now the largest outbreak of measles seen in the US since 2000 (“Measles | Cases and Outbreaks | CDC,” 2019).

Figure 1.2 - Measles in the US since 2000



April 2019 also saw quarantines on 2 separate southern California university campuses. One case of measles at the University of California at Los Angeles caused the quarantine of 119 individuals, both students and faculty, for whom the school did not have immunization records (Wong, 2019). A possible exposure risk at the library of California State Los Angeles led to the quarantine of 127 staff members and 71 students (CNN, April 28, 2019).

Mumps outbreaks are an entirely different story. The mumps vaccine, administered as part of the MMR, has a lower effectiveness rate than the measles vaccine. 2 doses of the MMR provides up to 97% protection against contracting measles, but for mumps it's a much lower effectiveness rate of 88% (CDC). During measles outbreaks most of the cases are usually unvaccinated individuals (Sugerman et al., 2010). During a large mumps outbreak in 2006 with more than 5700 cases -200 of them at the University of Kansas-up to 90% of the college cases

were fully vaccinated individuals. 79% had received their second MMR dose 10 or more years prior to the outbreak (Marin et al., 2008), suggesting waning immunity (Cortese et al., 2008).

Meningococcal outbreaks on campuses

Meningitis can be caused by bacteria or virus. Vaccinations are available for 5 strains of bacterial meningitis. Historically, bacterial meningitis risk is higher for college students than most other populations ("Meningococcal Disease and College Students," 2000.). The age groups at highest risk for developing meningitis are infants under 1, adolescents and young adults 15-24 and older adults over 80. Students living in dormitories and group settings have a higher risk than other students of contracting meningitis (Williams, Sosin, Kaplan, Hersh, & Preblud, 1989). Due to this risk, and the large percentage of college students living in group situations, the current adolescent vaccination schedule from the CDC includes the meningococcal quadrivalent vaccine, providing protection against the four most common strains of the bacterial infection. Among adolescent and young adults In the United States, 80% of cases are due to serogroups C, Y and W135, all included in the meningococcal quadrivalent vaccine (Khatami & Pollard, 2010).

A fifth and less common strain of meningitis, meningococcal serogroup B also causes outbreaks on campuses. A vaccine for meningococcal serogroup B is available; however, cases are rare enough among people over the age of 1, that the vaccine is not administered to everyone. The CDC recommends that people in high-risk groups over the age of 10 receive the meningococcal serogroup B vaccine, in addition to the quadrivalent vaccine included in the standard adolescent immunization schedule. Currently, due to Meningococcal quad being included in the recommended adolescent vaccination schedule, incidence rates among college students have decreased, and meningococcal serogroup B now causes of half of the meningococcal cases in people 19-22 years old, 2007-2016 ("Meningococcal Surveillance Data Tables | CDC," 2019).

The cost of outbreaks is significant

States with low vaccination compliance in primary and secondary schools are more likely to experience outbreaks in colleges and universities (Baughman, Williams, Atkinson, Cook, & Collins, 1994). The American College Health Association (ACHA) introduced pre-matriculation vaccination guidelines in response to campus outbreaks of the 1980's. More than a third of the cases of college measles outbreaks could have been prevented by pre-matriculation vaccination (Baughman, Williams, Atkinson, Cook, & Collins, 1994).

The childhood vaccination series, including polio, MMR, DTP, Hepatitis B, Hib, hepatitis A, rotavirus and pneumococcal are estimated to prevent over 30,000 premature deaths and \$20 - \$40 billion dollars in direct and indirect healthcare costs for every fully vaccinated birth cohort as well as reduced transmission to others (Schuchat, 2011; Roush, Murphy, & Group, 2007; Zhou et al., 2005). Kansas maintains a good vaccination rate among young children, with approximately 77% of children fully vaccinated by the age of 3.

Kansas adolescent vaccination rates, however, are lower, at only 72% for the meningococcal quad vaccination, compared to 85% nationally ("TeenVaxView | 2017 Adolescent MenACWY Vaccination Coverage Report | CDC," 2019). While school systems have vaccination requirements for young children, adolescents do not have similar requirements, often leaving matriculating college students unprotected.

Currently the ACHA recommends that college students receive the MMR, Tdap, Varicella, meningococcal quadrivalent, Meningococcal serogroup B and influenza vaccines to reduce outbreaks on campuses. The ACHA also suggests that vaccines that are recommended for adults, be administered for college to ensure greater compliance. Those recommended vaccines are Hepatitis A, Hepatitis B, Polio, Human Papilloma Virus (HPV) and Pneumococcal (Mack, n.d.).

A mass vaccination campaign during an outbreak incurs high labor costs to a campus as it requires hours of work from health professionals, staff, epidemiologists and community health workers. The University of Washington assessed the cost of their 2017 Mumps outbreak at \$282,762 or \$6692 per case (Pike et al., 2019). Those primarily affected by the mumps outbreak were members of sororities and fraternities on campus. The 2015-2016 Mumps outbreak at the University of Iowa is estimated to have incurred a cost of approximately \$649,000, including a third dose of the MMR for 5,500 people (Marin et al., 2018).

Outbreaks on college campuses are not necessarily contained to that campus. In 2006 a multi-state outbreak of mumps beginning on a university campus in Iowa caused more than 6500 reported cases mainly affecting university and college campuses across 8 states, including almost 200 cases at the University of Kansas (“Mumps | Cases and Outbreaks | CDC,” 2019, Cortese et al., 2008). The disease spread to neighboring communities and states with clusters linked to bars and parties that included non-students. That same outbreak spread to Nebraska through contact at an Iowa vs. Nebraska sporting event. January 2016 to June 2017 saw more outbreaks, with 9200 cases reported. The University of Illinois and the University of Indiana were involved in this outbreak (“Mumps | Cases and Outbreaks | CDC,” 2019).

Temple University in Philadelphia, Pennsylvania experienced an outbreak of mumps beginning in February 2019, by mid-April this outbreak involved 140 cases. The outbreak spread to other schools in the area including Drexel, West Chester University and the University of Pennsylvania (“Temple had no new cases of mumps Monday, for first time since outbreak began,” 2019).

Varying Policies Among States and Schools

Vaccine policies among post-secondary institutions vary widely across the country. There are schools, such as Syracuse University in New York state that require proof of immunization be submitted prior to the start of the school year. New York state requires this of all of its post-secondary schools (“New York State Section I - Requirements,” 2018.). Students who do not comply are not permitted to register for classes for their first semester. Other schools, such as the University of Illinois, will not allow registration for the second semester if proof of immunization is not provided. Illinois began requiring proof of two doses of MMR in 2016, after the conclusion of their mumps outbreak in 2015 (“Mumps | Cases and Outbreaks | CDC,” 2019).

Chapter 2 - Learning Objectives and Project Description

The Immunize Kansas Coalition (IKC), a group of researchers, health department officials, educators and providers, saw a critical need for a comprehensive vaccine policy for colleges and universities in Kansas.

Kansas law (K.S.A. 76-761a), adopted by Kansas Board of Regents, requires each state university to have in place policies and procedures requiring incoming students residing in student housing to be vaccinated against meningococcal disease. This requirement applies only to meningococcal diseases and only to the six state universities in Kansas; it does not apply to private colleges, private universities or community colleges.

IKC would like to expand this to apply to other types of colleges and more vaccinations. Charles Hunt, chair of the policy group within IKC, works as a senior analyst at Kansas Health Institute. He served as preceptor on this project and tasked me with assessing the current policy landscape of Kansas colleges and universities and conducting key informant interviews with stakeholders in Kansas health departments, colleges and universities to inform the model vaccine policy.

The first objective was to complete a short literature review of the history and epidemiology of vaccine-preventable diseases on college campuses in order to have the knowledge required to proceed on this project. Some sections of this literature review will be incorporated into the issue brief, one of the final products.

The second objective was to research existing policies. The current vaccine policies of 55 colleges and universities in Kansas were assessed through website searches, with supplemental phone calls when information was not readily available online. Information collected included whether the school offers student housing, if any vaccines are required and for what student population. The results of that search can be seen in Table 3.1.

The third objective was gathering key informant interviews, which included writing the interview protocol (Appendix), submitting it to the Institutional Research Board (IRB) and then implementing the approved protocol.

Key informant interviews were conducted with 12 representatives by phone or video conferencing from local and state health departments, universities, community and private colleges. For 11 vaccines, informants were asked if these vaccines should be required or recommended, and for what populations. They were asked whether fraternities and sororities should be covered by this policy, what exemptions should be allowed, how long grace periods should be if at all, and if and how they would keep records. Informants were also questioned about the challenges they foresee in implementing a vaccine policy, and what they think would be required in order to overcome those challenges. The interview instrument is attached as an Appendix.

This research was conducted while I was onsite in the KHI Topeka office. In addition to my project responsibilities, this applied practice experience provided ancillary benefits by allowing me to attend a lunch and learn session about insurance coverage with KHI staff, as well as 2 convenings produced for the public, the first addressing tobacco and smokeless tobacco use among teens in Kansas and the second addressing benefits of Medicaid expansion in Kansas.

I attended two quarterly meeting of IKC, one in Wichita and one in Topeka. I presented my project to the coalition at their Spring quarterly meeting on April 12, 2019 in Topeka, and again to KHI staff on May 3, 2019.

Both the issue brief and model policy documents have an expected publication date in June 2019. I also plan to produce a poster to be presented at the Kansas Public Health Association conference in September, 2019.

Chapter 3 – Results

The results of this project include both the survey of the current policy landscape and results of the key informant interviews

Current Policy Landscape

As noted earlier there is only one law in Kansas that requires large public universities in Kansas to require the meningococcal vaccine or a waiver for students living in housing. This law does not apply to private colleges, private universities or community colleges. It also only applies to university dormitories, leaving out other group living settings such as fraternities and sororities.

Table 3.1 - Current Vaccine Policies of Kansas Colleges and Universities

Type of Institution	#	Housin g	Mening.	MMR* ^	Tdap*	Varicell a	He p A	He p B*	Pneumococca l	Poli o	HIB
Public University	6	6	100% (6)	50% (3)	0	0	0	0	0	0	0
Private 4 year College and University	22	18	55%(12)	27%(6)	27%(6)	4.5% (1)	0	0	0	4.5 % (1)	4.5 % (1)
2 year Community College	19	18	74%(14)	26%(5)	16%(3)	0	0	0	0	0	0
Technical College	7	0	0	0	0	0	0	0	0	0	0

* this does not include clinical programs which all include different Immunization standards

^does not include required for International students only

Four types of schools were examined for this project: community colleges, private 4-year colleges, public universities and technical colleges. None of the 7 technical colleges in Kansas

have on-campus housing, nor do they have any immunization requirements for their students so they are not included in the figures. There are 22 private 4-year colleges in Kansas, 18 of them have housing, in fact many of the schools require their students to live on campus until they are 21 years old, or get married. Of the 19 community colleges in Kansas, 18 have on campus housing for students. All 6 large public universities offer on-campus housing for students.

Table 3.1, above, is a summary of the current policies I found at post-secondary schools in Kansas.

In addition to the meningococcal vaccine, half of the public universities in Kansas require two doses of the MMR (Measles, Mumps and Rubella) vaccine. No other vaccines are required, except for international students and participants in clinical health programs, which have their own requirements.

Community colleges and private colleges also have vaccination requirements for their students, shown below in figures 3.1 through 3.3. The 7 technical colleges in Kansas do not have vaccination requirements for their students.

Figure 3.1- Percent of Institutions Requiring MMR, by type of Institution, 2019

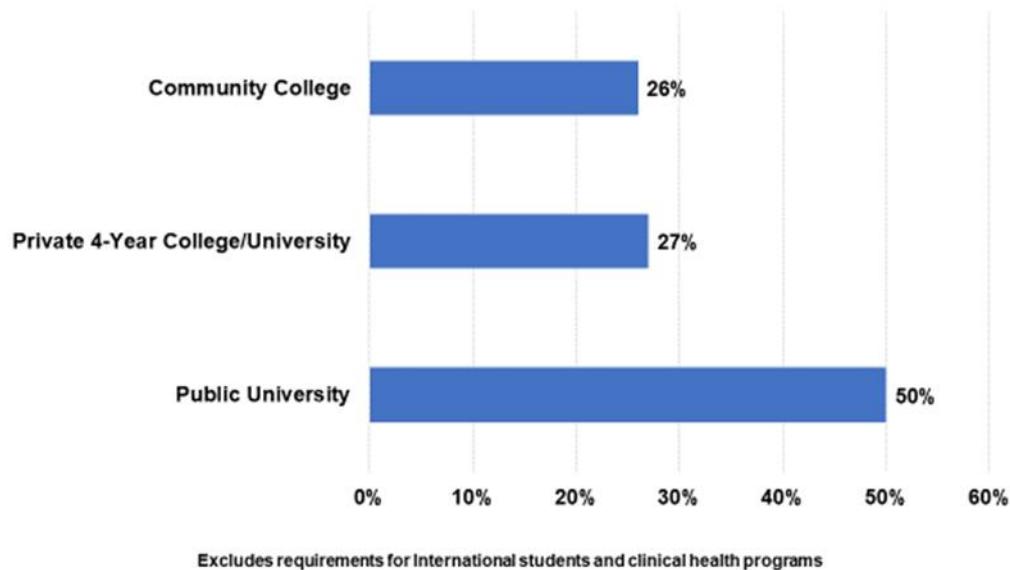


Figure 3.2- Percent of Institutions Requiring Meningococcal Quad, by type of Institution, 2019

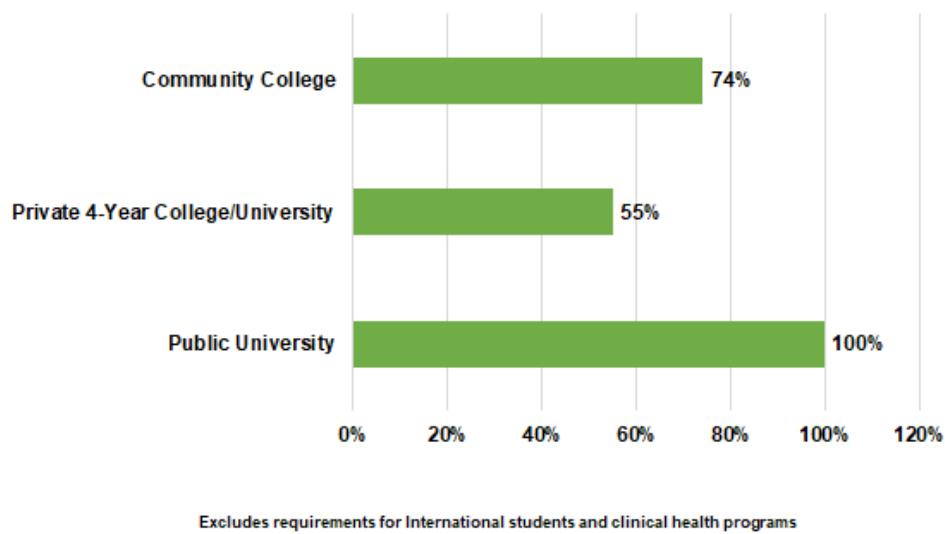
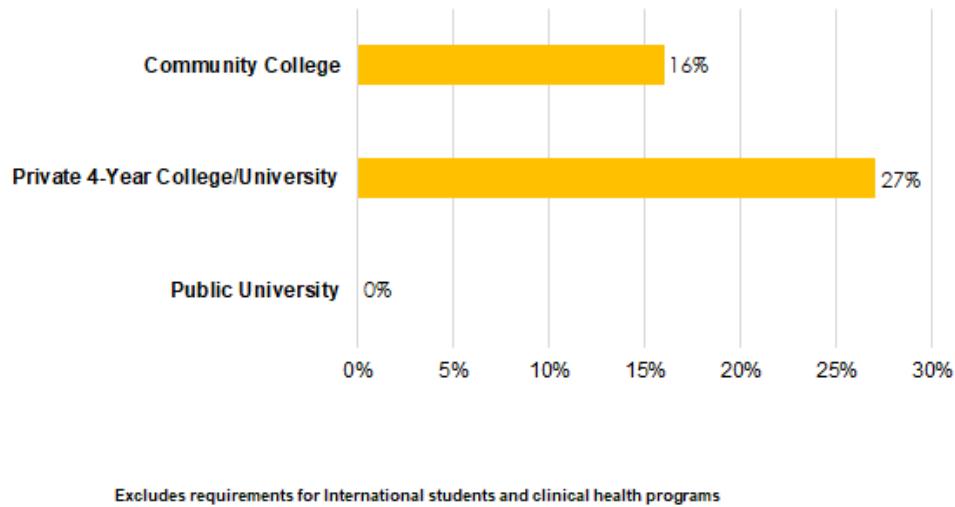


Figure 3.3- Percent of Institutions Requiring Tdap, by type of Institution, 2019



Key Informant Interviews

To inform the model policy, key informant interviews were conducted with 12 stakeholders including

- 2 representatives from Kansas Department of Health and Environment (KDHE)
- 4 from local health departments
- 2 health services representatives from public universities
- 2 health services representatives from community colleges
- 2 health services representatives from private colleges

The key informants were identified through contacts at the Immunize Kansas Coalition. The local health departments included in the interviews represent rural and semi-urban counties, all with more than one college in the county. The representatives from private colleges are part-time on-campus nurses, while the other informants work full time on their respective campuses.

Findings

The most significant findings from the key informant interviews are regarding the MMR and Meningococcal quad vaccines. 83% of our key informants would like to see the MMR required for all students, 75% thought the Meningococcal Quad vaccine should be required for all students in all group housing settings, the remaining 25% would like to see it required for all students. 75% would like to see the meningococcal Serogroup B immunization be required for all group housing. More than half (58%) of the key informants think the Varicella should be required of all students, and half thought the Tdap should be required of all students.

Participants would like to see all group living settings treated equally in terms of vaccination requirements. Fraternities and sororities are equally at risk for VPD outbreaks as dormitories. In fact, some Greek housing requires up to six students share a single room, creating more opportunity for transmission.

Challenges discussed by key informants are related to time and resources. Health services staff would like to see more support from college and university administration. Currently it is a challenge for health services to enforce mandatory vaccinations without the full support of school administration. Health services employees voiced concern that administration would view immunization requirements as a barrier to enrollment, thus adversely affecting fiscal health of the college. A hold on an account, the most common method of enforcing accountability, is ineffective if it can be overridden by the school administration.

Key informants would prefer a shorter grace period. Current grace periods offered by schools can be up to an entire semester. In many cases, no one notices the lack of immunizations or immunization paperwork until the student tries to enroll for their next semester and finds a hold on their account. All of the key informants expressed a desire for required vaccinations to be completed prior to enrollment or move-in date. Once the school year begins and a student steps on campus, it becomes more difficult, both in terms of health services work hours and appropriate consequences, to hold them accountable. Requiring immunization paperwork with admission paperwork and a grace period lasting only until school begins, students would have time to complete their requirements, and college staff would reduce their time spent tracking down students.

Record keeping is an important facet of an immunization policy. In case of an outbreak, it is necessary to be able to assess who is immunized and who isn't in a timely manner. In general,

record-keeping infrastructure is poor, costing health services employees a lot of time in searching and data entry.

School support would ideally also include funding for staffing. Adequate record keeping requires work hours that many health services departments do not have. Further discussion of these challenges is found below in chapter 4.

Chapter 4 – Discussion

A model policy for Kansas colleges and universities should include a requirement for 2 doses of the MMR for anyone born after 1957. The meningococcal quadrivalent vaccine will be included as required for all students in group living situations.

Key informant interviews brought to light several issues that need to be considered in developing a model policy. While interviewees support requiring vaccinations, it is not a simple policy to adopt and implement. Enforcing consequences for noncompliance and record-keeping are larger issues that need to be addressed. There is also a question as to how a school can enforce vaccination requirements for group living situations such as fraternities and sororities, but due to high risk of transmission in those houses it is an important conversation for schools to have.

Record Keeping

Infrastructure for tracking immunization records is poor, putting much of the burden on college health services employees who are already often overtaxed. Large universities have full service health services programs, however small schools often only have an on-campus nurse available for a few hours a week. Record-keeping is a low priority in those cases, however in an outbreak, those records are very important for tracking students who are at risk of contracting and spreading the disease.

Poor record-keeping infrastructure a nationwide issue that is slowly being resolved as immunization registry systems are implemented. Kansas currently uses a registry system called KSWebIZ. Beginning in 2020, health service providers in Kansas will be required to enter all vaccination information into KSwebIZ. The WebIZ system is being rolled out in other states as well. For states that use this system, it is possible to connect. Inter-state communication is important for consistency and accessibility. For students in Kansas that will make record keeping significantly easier, however out of state students will still prove challenging for Kansas institutions. As more states use the Web IZ system that may become less of an issue, but at the moment record keeping is complicated and time consuming for schools.

Exemptions

Medical and religious exemptions for vaccinations are offered in Kansas. Medical exemptions must be renewed each year, requiring the signature of a medical professional that has determined the person is still unable to be vaccinated, usually due to either immunosuppression or an allergy to an ingredient of the vaccine. Examples of the former would be people undergoing chemotherapy, an example of the latter would be someone with a severe egg allergy – egg is an ingredient in the varicella vaccine. Religious waivers are acquired with proof from one's spiritual leader that the person is an active member of a religious community that objects to vaccinations. Religious waivers do not need to be updated each year.

The meningococcal waiver offered by public universities in Kansas for students living in housing is not necessarily medical or religious. A student does not have to supply a reason, in fact it is quite simple to print the form, sign it and submit. This, in many instances, is easier than either getting the vaccination itself, or finding proof of immunization. Some schools such as the University of Kansas remedy that by requiring students who wish to submit a waiver, also meet with a health services representative.

The key informants were all in agreement that the more difficult that waiver process is, the fewer students will choose that option.

Support from Administration

Health services representatives were consistent across all types of schools in underscoring the importance of administration support for effective policy adoption. Without their support, there will be inadequate support for consequences for noncompliance with proof of immunization requirements. If administration is more concerned with enrollment numbers than proof of vaccination compliance, health services personnel finds it very difficult to enforce policies. With full support from school administration, students should immediately see consequences of noncompliance, whether it is delayed enrollment or another method.

Chapter 5 – Competencies

1. Student Attainment of MPH Foundational Competencies

My initial work at the Kansas Health Institute was a short literature search to learn about the spread of vaccine preventable diseases on college campuses. I then assessed existing vaccination policies at 55 colleges and universities in Kansas. This process allowed me to utilize foundational competency *7: Assess population needs, assets and capacities that affect communities' health*. I performed an internet search of the websites of every accredited post-secondary school in Kansas and supplemented the information I found with phone calls to the institutions. The next part of my project, key informant interviews with health department employees and representatives from college and university health services, also fulfills this competency. I spoke at length with stakeholders about their vision of an ideal vaccine policy for their institutions, the challenges of instituting it and the things they would need to make it work.

I utilized foundational competency *13: Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes* by working with KHI and IKC to identify stakeholders for my key informant interviews. I forged relationships with several members of IKC who helped to connect me with people in relevant roles who could serve as key informants in this project. The IKC meeting organizer and administrator sent introductory emails to me and representatives from health services at several community colleges as well as names of people at local health departments in rural counties.

The model vaccine policy project utilized competency *15: Evaluate policies for their impact on public health and health equity* as I examined existing vaccine policies with emphasis on communicable diseases that spread easily on college campuses. I also attained this competency in creating a new model policy, thinking extensively as to how this policy would impact public health on campuses and the surrounding communities across Kansas.

I utilized foundational competency *9: Design a population-based policy, program, project or intervention* in creating the model vaccine policy for Kansas colleges and universities. Our model vaccine policy will be available for all colleges and universities that wish to implement it.

Throughout my applied practice experience, I have worked closely with KHI staff as well as members of IKC to draft this vaccine policy, fulfilling competency 21: *Perform effectively on interprofessional teams.*

Table 5.1 Summary of MPH Foundational Competencies

Number and Competency	Description
7 Assess population needs, assets and capacities that affect communities' health	I identified existing vaccine policies at 55 colleges and universities in Kansas, and assisted in creating a new model policy that addresses disease outbreaks among populations on college campuses
9 Design a population-based policy, program, project or intervention	Our model vaccine policy will be created for all colleges and Universities that wish to implement it.
13 Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes	Kansas Health Institute is working alongside the Immunize Kansas Coalition to influence public health outcomes.
15 Evaluate policies for their impact on public health and health equity	We are examining existing vaccine policies with emphasis on communicable diseases that spread easily on college campuses.
21 Perform effectively on interprofessional teams	I will be working closely with employees of Kansas Health Institute as well as members of the Immunize Kansas Coalition to draft this vaccine policy

2. Student Attainment of MPH Emphasis Area Competencies

While my applied practice experience does not involve nutrition, between this experience, my coursework and my 2 years as program coordinator for K-State Extension and Research and SNAP-Ed, I have worked diligently to ensure I have attained all five public health nutrition competencies listed in table 5.3.

The course Public Health Nutrition (FNDH 600) provided an in-depth introduction to the issues and studies of the field, fulfilling competency 1: *the acquisition of public health nutrition knowledge and skills, and evaluate how to select information efficiently and effectively for public health practice.* In Global Health and Nutrition (FNDH 700) I learned about world-wide nutrition issues, chronic disease surveillance and a multitude of programs targeting malnutrition around the world, fulfilling competency 2: *Examine chronic disease surveillance, policy, program planning and evaluation, and program management, in the context of public health nutrition.* For that course I wrote a paper that examined type 2 diabetes prevention in adolescents which provided a view into different types of programs and their benefits and pitfalls which helped to

fulfill competency 3: *Develop and examine the administration of population-based food, nutrition and health services*. Clinical Nutrition 1 (FNDH 631) and Functional Foods for Chronic Diseases (FNDH 820) allowed me to fulfill competency 4: *Examine epidemiological concepts of human nutrition in order to improve population health and reduce disease risk*. Nutritional Epidemiology (FNDH 844) taught me competency 5: Critique nutritional epidemiological research design methods.

Table 5.3 Summary of MPH Emphasis Area Competencies

MPH Emphasis Area:	
Number and Competency	Description
1	Information literacy of public health nutrition
2	Compare and relate research into practice
3	Population-based health administration
4	Analysis of human nutrition principles
5	Analysis of nutrition epidemiology

References

Cortese, M. M., Jordan, H. T., Curns, A. T., Quinlan, P. A., Ens, K. A., Denning, P. M., & Dayan, G. H. (2008). Mumps Vaccine Performance among University Students during a Mumps Outbreak. *Clinical Infectious Diseases*, 46(8), 1172–1180

Data Dashboard | IKC. (n.d.). Retrieved April 27, 2019, from <https://www.immunizekansascoalition.org/datadash.asp>

Hedden, E. M., Jessop, A. B., & Field, R. I. (2014). An Education in Contrast: State-by-State Assessment of School Immunization Records Requirements. *American Journal of Public Health*, 104(10), 1993–2001.

Huang, A. S., Cortese, M. M., Curns, A. T., Bitsko, R. H., Jordan, H. T., Soud, F., ... Dayan, G. H. (2009). Risk Factors for Mumps at a University with a Large Mumps Outbreak. *Public Health Reports*, 124(3), 419–426. [1](#)

Immunization Requirements. (n.d.). Retrieved April 28, 2019, from <https://studenthealth.utah.edu/services/immunizations/>

Individual and Community Risks of Measles and Pertussis Associated With Personal Exemptions to Immunization. | Infectious Diseases | JAMA | JAMA Network. (n.d.). Retrieved April 26, 2019, from <https://jamanetwork.com/journals/jama/fullarticle/193407>

Khatami, A., & Pollard, A. J. (2010). The epidemiology of meningococcal disease and the impact of vaccines. *Expert Review of Vaccines*, 9(3), 285-.

López-Perea, N., Masa-Calles, J., Torres de Mier, M. de V., Fernández-García, A., Echevarría, J. E., De Ory, F., & Martínez de Aragón, M. V. (2017). Shift within age-groups of mumps incidence, hospitalizations and severe complications in a highly vaccinated population. Spain, 1998–2014. *Vaccine*, 35(34), 4339–4345.

Mack, R. (October, 2018.). ACHA Recommendations, *Immunization Recommendations for College Students*. 12.

Marin, M., Kitzmann, T. L., James, L., Quinlisk, P., Aldous, W. K., Zhang, J., ... Ortega-Sanchez, I. R. (2018). Cost of Public Health Response and Outbreak Control With a Third Dose of Measles-Mumps-Rubella Vaccine During a University Mumps Outbreak—Iowa, 2015–2016. *Open Forum Infectious Diseases*, 5(10).

Marin, M., Quinlisk, P., Shimabukuro, T., Sawhney, C., Brown, C., & LeBaron, C. W. (2008). Mumps vaccination coverage and vaccine effectiveness in a large outbreak among college students—Iowa, 2006. *Vaccine*, 26(29), 3601–3607.

Measles | Cases and Outbreaks | CDC. (2019, April 22). Retrieved April 26, 2019, from <https://www.cdc.gov/measles/cases-outbreaks.html>

Meningococcal Disease and College Students. (n.d.). Retrieved February 28, 2019, from <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr4907a2.htm>

Meningococcal Surveillance Data Tables | CDC. (2019, March 1). Retrieved April 26, 2019, from <https://www.cdc.gov/meningococcal/surveillance/surveillance-data.html>

MMR Vaccination | What You Should Know | Measles, Mumps, Rubella | CDC. (2019, May 2). Retrieved May 9, 2019, from <https://www.cdc.gov/vaccines/vpd/mmr/public/index.html>

Mumps | Cases and Outbreaks | CDC. (2019, April 9). Retrieved April 26, 2019, from <https://www.cdc.gov/mumps/outbreaks.html>

Philadelphia, T. C. H. of. (2014, November 20). Vaccine History: Developments by Year [Text]. Retrieved April 25, 2019, from <https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-history/developments-by-year>

Pike, J., Schwartz, S., Kay, M., Perez-Osorio, A., Marin, M., Jenkins, M., ... Zhou, F. (2019). Cost of Responding to the 2017 University of Washington Mumps Outbreak: A Prospective Analysis. *Journal of Public Health Management and Practice, Publish Ahead of Print*.

Pilishvili, T., Lexau, C., Farley, M. M., Hadler, J., Harrison, L. H., Bennett, N. M., ... Moore, M. R. (2010). Sustained Reductions in Invasive Pneumococcal Disease in the Era of Conjugate Vaccine. *The Journal of Infectious Diseases*, 201(1), 32–41.

Pinzón-Redondo, H., Coronell-Rodriguez, W., Díaz-Martinez, I., Guzmán-Corena, Á., Constenla, D., & Alvis-Guzmán, N. (2014). Estimating Costs Associated with a Community Outbreak of Meningococcal Disease in a Colombian Caribbean City. *Journal of Health, Population, and Nutrition*, 32(3), 539–548.

Rappuoli, R., Pizza, M., Giudice, G. D., & Gregorio, E. D. (2014). Vaccines, new opportunities for a new society. *Proceedings of the National Academy of Sciences*, 111(34), 12288–12293.

Ratnapradipa, K. L., Norrenberns, R., Turner, J. A., & Kunerth, A. (2017). Freshman Flu Vaccination Behavior and Intention During a Nonpandemic Season. *Health Promotion Practice*, 18(5), 662–671.

Roush, S. W., Murphy, T. V., & Group, and the V.-P. D. T. W. (2007). Historical Comparisons of Morbidity and Mortality for Vaccine-Preventable Diseases in the United States. *JAMA*, 298(18), 2155–2163.

Schuchat, A. (2011). Human Vaccines and Their Importance to Public Health. *Procedia in Vaccinology*, 5, 120–126.

Section I - Requirements. (n.d.). Retrieved April 28, 2019, from
https://www.health.ny.gov/prevention/immunization/handbook/section_1_requirements.htm

States With Religious and Philosophical Exemptions From School Immunization Requirements. (n.d.). Retrieved April 26, 2019, from <http://www.ncsl.org/research/health/school-immunization-exemption-state-laws.aspx>

Sugerman, D. E., Barskey, A. E., Delea, M. G., Ortega-Sánchez, I. R., Bi, D., Ralston, K. J., ... LeBaron, C. W. (2010). Measles Outbreak in a Highly Vaccinated Population, San Diego, 2008: Role of the Intentionally Undervaccinated. *Pediatrics*, 125(4), 747–755.

TeenVaxView | 2017 Adolescent MenACWY Vaccination Coverage Report | CDC. (2019, March 12). Retrieved April 27, 2019, from <https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/data-reports/menacwy/reports/2017.html>

Temple had no new cases of mumps Monday, for first time since outbreak began. (n.d.). Retrieved April 26, 2019, from WHYY website: <https://whyy.org/articles/temple-had-no-new-cases-of-mumps-monday-for-first-time-since-outbreak-began/>

Vaccines and Immunizations. (2018). Retrieved February 28, 2019, from
<https://www.acha.org/ACHA/Resources/Topics/Vaccine.aspx>

VaxView | Vaccination Coverage | NIS | Home | CDC. (2018, June 13). Retrieved February 28, 2019, from <https://www.cdc.gov/vaccines/vaxview/index.html>

Williams, W. W., Sosin, D. M., Kaplan, K. M., Hersh, B. S., & Preblud, S. R. (1989). Vaccine-preventable diseases on college campuses: the emergence of mumps. *Journal of American College Health: J of ACH*, 37(5), 197–203.

Zhou, F., Santoli, J., Messonnier, M. L., Yusuf, H. R., Shefer, A., Chu, S. Y., ... Harpaz, R. (2005). Economic Evaluation of the 7-Vaccine Routine Childhood Immunization Schedule in the United States, 2001. *Archives of Pediatrics & Adolescent Medicine*, 159(12), 1136–1144.

Appendix

Key Informant Interview Instrument

Interviewee #:

The Kansas Health Institute is working together with Immunize Kansas Coalition to conduct formative research in college/university vaccine policies in order to create a model policy to be promoted and disseminated by the Immunize Kansas Coalition. We are seeking feedback from a variety of stakeholders, including employees of the Kansas Department of Health and Environment, several local health departments and college and University health services to help us develop the model policy and plan for its successful utilization. Your responses to these questions will be summarized with responses from other stakeholders and will be shared with the project team. Your name and organization will never be associated with your individual response. However, depending on the context of the feedback, we may identify your role (e.g., local health department staff) and it is possible that someone may use context clues to determine which person or organization provided a certain response. We will avoid this as much as possible.

Additionally, we would like to record your interview so that we can make sure to have accurate notes about our discussion today. The recording will only be available to individuals working on the policy at KHI and will be stored in a password-protected folder on Microsoft Teams. Do I have your permission to record? Do you have any questions before we proceed?

Under Kansas law each state university is required to have in place policies and procedures requiring incoming students residing in student housing to be vaccinated against meningococcal disease. This requirement applies only to meningococcal disease and only to the six state universities in Kansas; it does not apply to private colleges, private universities or community colleges.

Immunize Kansas Coalition (IKC) is interested in developing a comprehensive model policy to share and promote among colleges and universities in Kansas. Although the specifics of such a policy will be determined through the course of the project, it is anticipated that the policy would align with immunization guidelines from the American College Health Association.

1) I am going to read a list of vaccines, please tell me if you think they should be included as recommended or required as part of a model college/university policy, and which population groups should be included for vaccines that are recommended and those that are required (e.g., all students, only students in university housing, faculty, staff, etc.)?

MMR

Meningococcal Quad
Meningococcal Serogroup B
Varicella
Tdap
Polio
Influenza (annual)
Hep A
Hep B
HPV
Pneumococcal
Other

- 2) How should a model college/university policy address Greek student housing (fraternities and sororities) which are not covered by current law?
- 3) What kind of exemptions should be allowed, and for whom?
- 4) What should the grace period policy for vaccines be?
- 5) How should the model policy address immunization record-keeping, e.g., include a provision for reporting into KSWEBIZ?
- 6) What challenges would you anticipate with adopting a comprehensive model college/university policy?
- 7) What would be needed to overcome those challenges?
- 8) Do you have any other thoughts about a model vaccine policy for colleges and universities?