

In-School Vaccination Clinic at Fort Riley Middle School

Methods and Evaluation

Master of Public Health Capstone Field Experience Project  
Conducted at the Fort Riley Department of Public Health  
Fort Riley, KS

By

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## Outline

Introduction: Capstone field experience project with the Fort Riley Department of Public Health (FRPH).

This project was two-fold. The first part of the project was to observe, assist with, and develop an understanding of the different areas of the department of public health at Fort Riley. The second was to organize, manage, and analyze a vaccination clinic at the Fort Riley Middle School. The vaccination clinic offered vaccines for chicken pox, tetanus/diphtheria/pertussis, meningococcal disease, human papillomavirus, and the flu.

### Section 1

Experience with areas of PH at Fort Riley

- Environmental Health
- Occupational health
- Industrial hygiene
- Health promotion
- Public health nursing

### Section 2

In-school vaccination clinic at Fort Riley Middle School (FRMS)

- Background information
- Literature review
- Project
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    - Review of all vaccination records at FRMS
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#### Results

- How many vaccinations were given
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Thank you to

Dianne Conway, Joe Handlos, Amy & Stephanie at FRMS, K-State Division of Biology, Fort Riley Public Health staff, advisory committee

## Fort Riley Public Health Rotations

United States Army Public Health Command is charged with preventing epidemics and the spread of disease, protecting against environmental hazards, preventing injuries, promoting and encouraging healthy behaviors, responding to disasters and assisting communities in recovery, and assuring the quality and accessibility of health services. (United States Army Public Health Command)

Fort Riley Public Health is divided into five departments; environmental health, occupational health, industrial hygiene, public health nursing, and health promotion. During the rotations, I observed the different functions of each section.

Environmental health (EH) is responsible for monitoring indicators in the environment that could potentially affect public health. This includes monitoring the mosquito and other pest populations on Fort Riley and submitting mosquito samples for testing for West Nile Disease. They also inspect and grade dining facilities and have the authority to recommend closure of a facility that does not meet requirements. Additionally, post swimming pools and associated facilities are tested and inspected. EH also creates advisories to help protect people from extreme environmental conditions. During the summer months the heat index is calculated and monitored; during the winter months the extreme cold exposure conditions are monitored.

Occupational health (OH) deals with health and safety within the Fort Riley workforce, both military and civilian. OH consists of occupation health nurses, therapists, and administrative staff. They conduct pre-appointment evaluations for new employees, which include hearing and vision tests, and lung function evaluations.

They also have an audiologist who can advise workers of noise hazards and provide education about ear and hearing protection. Occupational health also deals with workplace ergonomics and conducts job site evaluations to help provide a workstation that is best suited for the individual. The staff also deals with worker compensation claims to help ensure people get the therapy or services they are entitled to and ensure that some individuals do not abuse the services.

Industrial hygiene (IH) is closely related to occupational health as it also deals with the work place. Industrial hygiene is the recognition, evaluation, and control of hazards in the work place. Fort Riley has many occupational hazards including chemical hazards, physical hazards, environmental exposures (heat, cold, & sun), radiation, and ergonomics. Industrial hygienists evaluate these risks and recommend actions to minimize risk. These can include worksite modifications (ergonomics), facemask and other personal protective equipment use, and monitoring and limiting exposure to noise, radiation, or extreme conditions.

Health promotion focuses on health education and prevention of disease and injury. Services such as tobacco cessation classes and personal wellness consultations are offered. Issues such as obesity, nutrition, and physical activity are included in these

evaluations. There are online classes that military beneficiaries may take to educate themselves on over-the-counter medications and supplies. Once a person has completed a course they can receive these supplies free of charge. Health promotion also monitors health indicators for the Fort Riley population, such as smoking prevalence. Additionally, they provide guidance on health related issues to military group leaders, such as how to handle personal health information, soldiers with health issues, and what resources are available for assistance.

Public Health Nursing deals with testing for and monitoring communicable diseases including sexually transmitted diseases and tuberculosis and disease prevention including vaccinations. During the public health nursing rotation, I was able to assist in a minor outbreak investigation. One interesting point made during this investigation was that most incidents never come to an actual outbreak investigation. There is first the daily epidemiology of any disease occurrence. For example, at a day care center, the manager would have to decide if the two children that were sent home for the flu constitute an outbreak or if this is within the expected or normal range for the given conditions (time of year, etc.) When there is a question as to if a given disease occurrence is within normal limits, then public health nursing is called for an outbreak investigation.

Another large portion of public health nursing is organizing and conducting flu vaccine clinics. I participated in one such clinic at Fort Riley's Apple Days celebration and fair. Functions of the clinic include public education about the flu

vaccine, who should be vaccinated with which type of vaccine, organizing forms and records, medical review, and actual vaccine administration.

Public health nursing also provides other patient education, vaccine administration, and disease testing including tuberculosis and sexually transmitted diseases.

## In-school vaccination clinic

### Background information

Vaccinations are our number one defense against many infectious agents. Vaccines not only create or enhance immunity in individuals, they also help to reduce the number and severity of outbreaks of vaccine preventable diseases if given to a large enough percentage of the population. This can be evidenced by the virtual elimination of diseases such as small pox and polio in the United States. (Center's for Disease Control and Prevention, 2010)

The Centers for Disease Control and Prevention (CDC) publish a recommended schedule of vaccinations for everyone based on age, gender, medical history, and risk factors. The CDC also publishes vaccination rates for specific populations. The rates of compliance with recommended vaccinations is considerably higher for young children than for adolescents. The complete middle school age group (10-15 years old) is actually missed by the CDC reports. The teen age group (13-18) is the closest age group that was used for comparison in this report. Children age 19-36 months in the United States are reported to have compliance rates of 83.9% for 4 doses of DTaP (tetanus/diphtheria/pertussis) vaccine, 92.8% have had the recommended 3 doses of the polio vaccine, 90% have had the measles/mumps/rubella vaccine and 89.6% have had the varicella (chickenpox) vaccine. In Kansas, 87.2% of children age 19-36 have had 4 doses of DTaP, 93.8% have had 3 doses of polio vaccine, 92.5% have had the measles/mumps/rubella vaccine, and 92% have had the varicella vaccine (Centers for Disease Control and Prevention, 2009). For 13-17 year olds, the vaccine recommendations change and

children need to be kept up to date. In the United States, it is reported that 87% of teens have had one dose of varicella vaccine and only 48.6% have had the recommended 2 doses, 55.6% have had one dose of Tdap vaccine since age 10, 53.6% have had one dose of the meningococcal disease vaccine, and 44.3% have started the series of 3 doses of human papillomavirus vaccine. In Kansas 78.4% of teens have had at least one dose of varicella vaccine, 46.4% have had the recommended two doses, 63.6% have had one dose of Tdap since age 10, 38.3% have had one dose of meningococcal disease vaccine, and 44.1% have had at least one dose of the three dose series of human papillomavirus vaccine—all vaccines that are recommended by the CDC for this age group (Centers for Disease Control and Prevention, 2009).

Vaccination Rates for 13-17 Year Olds  
(data from (Centers for Disease Control and Prevention, 2009))

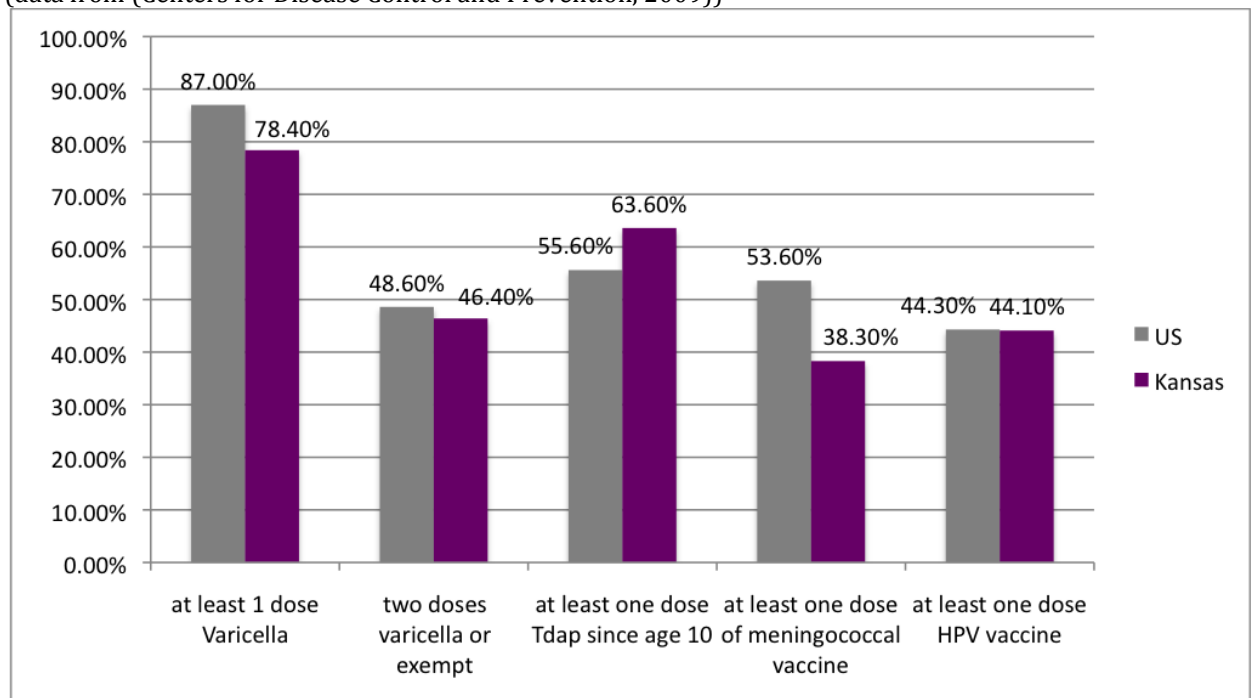


Table #1



The goal of this project was to address the age group of preteens and teens where vaccination rates are lower. To do this, Fort Riley Public Health partnered with Fort Riley Middle School to conduct an in-school vaccination clinic. FRMS is a relatively unique population in that over ninety-five percent of the children enrolled are military beneficiaries. This is because the Unified School District 475 (not military associated) is located on the Fort Riley military installation. This also means that ninety-five percent of the students are eligible for vaccinations paid for by the military as part of their health insurance benefits package. This provided a great opportunity for the Department of Public Health at Fort Riley to go into the school to provide the vaccinations that the students were already eligible to receive.

LTC Paul Benne, MD, MPH and Fort Riley Public Health Chief decided that we would offer vaccinations for chickenpox (varicella), Tdap, meningococcal disease, humanpapillomavirus (HPV), and seasonal influenza at the Fort Riley Middle School in-school vaccination clinic.

Chickenpox and Tetanus/diphtheria/pertussis (Tdap) vaccination is required by the state of Kansas for enrollment in public schools. One dose of varicella (chicken pox) vaccine is required for school enrollment. The Centers for Disease Control and Prevention recommend two doses of this vaccine for greater immunity(Centers for Disease Control and Prevention, 2010). Most students at FRMS, 52.95%, only had one dose of varicella.

Tdap is monitored at the seventh grade level. Students enrolled in the seventh grade must have had a Tdap vaccination after age 10 to attend school. At the beginning of the school year more than 200 of the approximately 650 students enrolled at FRMS were not in compliance and would therefore be excluded from school on October 6, 2010 if they did not bring their vaccinations up to date or provide documentation of previous vaccination. The most common deficiency of a required vaccine was the Tdap vaccination for seventh graders. Although, some students were delinquent in the varicella (chickenpox) or the hepatitis B vaccination (also required by the State of Kansas.)

The Fort Riley community is a unique situation in that it is a military installation consisting of barracks and group housing that is also very near Kansas State University that also has many group housing situations including dorms and sorority and fraternity houses. These group housing situations are risk factors for meningitis. The CDC recommends vaccination for meningococcal disease for middle school children and for people in higher risk situations such as group housing (Centers for Disease Control and Prevention, 2010).

Human papilloma virus vaccination is a newer vaccine, first available in 2006, that provides protection against some strains of HPV. The vaccine that was offered during this clinic, Gardasil, provides protection against four strains, two that can cause cervical cancer and two that can cause genital warts. This vaccine is recommended for 9-26 year olds. Originally, Gardasil was only recommended for females, in 2010 the CDC extended the recommendation for males age 9-18 (Centers

for Disease Control and Prevention, 2010). The middle school age group is ideal for getting this vaccine. HPV vaccination is a series of three vaccines. Most students who received this vaccine at the in-school clinic were getting the first vaccine in the series. However, some students received their second or third dose.

The CDC is recommending that everyone get the 2010/2011 influenza vaccination (containing seasonal influenza and H1N1) this year (Centers for Disease Control and Prevention, 2010).

#### Literature review

Vaccination coverage drops significantly from children to adolescents and varies by type of vaccine (Lehmann, 2009). There are many different barriers to adolescents being current on vaccines. "There is a general lack of awareness among parents and adolescents about the risk and severity of infectious diseases and the need for immunizations" (Lehmann, 2009). One survey reported 47% of adolescents attending health clinics were unable to give any correct information about vaccines. The National Health Interview Survey has shown that parents often overestimate and inaccurately recall their child's vaccination history. Parents have reported greater than 90% coverage of Td vaccination for 13-15 year olds. However the National Immunization Survey-Teen found an actual coverage rate of 43%. Some studies have also indicated misconceptions about vaccines and vaccine coverage by health care providers. While 100% of providers reported taking "every opportunity to immunize patients at preventative and follow-up visits," chart reviews showed 60% of providers vaccinated patients during preventative visits and only 20%

vaccinated patients during follow-up visits (Lehmann, 2009). One survey reported only 31% of parents answered “yes” to “Are doctors recommending vaccines for 11-12 year olds?” (Middleman, 2010)

Cost is another reason for lower vaccination rates. Mosier and Mosier Family Physicians in Manhattan, Kansas reports that the HPV vaccination costs \$180 per vaccine without insurance (\$540 for the 3-dose series), \$55 for Tdap, \$118 for varicella vaccination, and \$26 for influenza vaccination. Additionally, vaccine administration costs \$22 for the first vaccination and \$14 for other shots in the same appointment. Meningococcal vaccination is not offered at this clinic. Most insurance does cover 100% of the cost (Staff, 2010). With health care reform, it is likely that all insurances will cover 100% of recommended vaccinations.

#### Increasing vaccination rates

One goal of the Centers for Disease Control and Prevention’s Healthy People 2010 Initiatives is to increase vaccine coverage for 13-15 year olds to greater than 90% for all recommended vaccines (Centers for Disease Control and Prevention, 2010). Possible ways to help achieve this goal include the creation of national immunization registries which would remind both patients and providers when vaccinations are due. This would help eliminate confusion when a patient switches providers and help create continuity of recommendations by physicians. Direct marketing by pharmaceutical companies for vaccination can also help increase awareness among patients and providers. “Vaccine and disease awareness is the primary factor in improving overall immunization rates and is essential for both parents and adolescents.” (Lehmann, 2009) Also, administering vaccines and

providing education in nontraditional settings such as schools, community clubs, churches, and pharmacies may also help to increase adolescent vaccine coverage.

“Therefore, the expansion of vaccine administration to nontraditional sites is crucial.” (Lehmann, 2009)

“School-based immunization initiatives have been successful at improving access to immunizations and increasing immunization rates among young adolescents in the United States.” (Middleman, 2010) A 2009 study examined which vaccines parents would consider allowing their child to receive at school. Results indicated that 57% of parents would allow their child to get the flu vaccine at school, 41% would allow Tdap vaccine, 39% would allow varicella vaccine, 35% would allow meningococcal vaccination, and 27% would allow HPV vaccination at school. The differences in percentages could be related to parents being more willing to have their child receive vaccines that they see as routine administered at school, and less likely to be okay with their child receiving newer vaccines or vaccines that they are less familiar with at school. This particular survey was conducted during the 2009 H1N1 pandemic and schools were being closed due to outbreaks, this may have impacted the larger percentage of parents willing to allow flu vaccination at school as compared with other vaccines. Having experience with in-school vaccination clinics is significantly associated with parents’ willingness to have their children vaccinated at school (Middleman, 2010).

School-based clinics for influenza immunization were implemented in 2009 in response to the H1N1 pandemic. These clinics provided information valuable to planning other vaccination clinics. Some noted challenges to school-based clinics include disrupting educational activities, having adequate staff, transportation and

administration of vaccine, and parental consent. Advantages to school based clinics are large numbers of children centrally located, general community trust of schools, the familiarity of school nurses and staff with the students and student medical information, access to parental contact information, and access to vaccination records. Cooperation between health departments, schools, and school nurses was also noted as essential for a successful vaccination clinic. Studies reported having parental consent forms completed prior to the clinic day was very beneficial (Jenlink, Kuehnert, & and Mazyck, 2010).

## Project

### Organization

Fort Riley Public Health (FRPH) representatives LTC Paul Benne, Fort Riley Public Health Chief; MAJ Yvette Malmquist, public health nurse; and Megan Webb, K-State master of public health student and Fort Riley Public Health extern, met with Mr. Joe Handlos, the Fort Riley Middle School principle, and Dianne Conway, the FRMS school nurse to discuss the clinic. The team agreed that the clinic could be conducted in the fall of 2010 at Fort Riley Middle School. Dianne Conway agreed to help with forms and vaccination records. Fort Riley HIPAA (Health Information Portability and Accountablility Act) certification was completed by Megan Webb and all FRPH staff.

To organize the clinic it was necessary to inform students and parents/gaurdians of Fort Riley Middle Schoolers about the vaccination clinic, educate them about the vaccines and the diseases they help to prevent, and encourage participation.

## Consent forms

A letter to the parents/guardians was created explaining the vaccination event (appendix 1). A consent form was also created for the guardians to fill out (appendix 2). This form had to include health history questions relevant to all five of the vaccinations that we were offering, links to the vaccine information sheets (VIS) for all vaccines, a place to clearly indicate which vaccines the child was to receive, personally identifying information for the student and the student's military sponsor (if they were military beneficiaries), and a resource for guardians who had questions. People with questions were offered a choice of calling the school nurse or the Fort Riley Public Health office. A brief informational message was provided at the meeting for sports participants and their parents/guardians in August and a short power point presentation was given at the orientation before school started. The letter to the parents and the consent form were handed out at these meetings.

Public announcement of the event was planned through the public affairs office of the Irwin Army Community Hospital to include a newspaper article and a short public service announcement about meningitis on Fort Riley TV. However, actual dissemination of this information is unclear.

Two of the vaccines that were offered are required for students to attend school in Kansas, the Tdap or tetanus, diphtheria, pertussis combination vaccine for seventh graders and the chicken pox vaccine for all students. Students that were out of compliance with this requirement (or out of compliance with any vaccine

requirement) had letters sent via the US mail explaining this. These letters had a copy of the letter to the parents and the vaccination consent form included. They also had a copy of a Merck publication with information about the diseases and vaccinations for chickenpox, pertussis, meningococcal disease, and human papillomavirus. An informational sheet on HPV, provided by Merck, was also included in most letters. Students who were in compliance still got a letter, consent form, the Merck publication and the HPV publication sent home, but these were sent home to the parents, hand carried by the students. Each student was given an envelope containing this information addressed "to the parents of" that child. The consent forms were given a due date of September 17, 2010. The day after the forms were sent home with the students, a mass email was sent to all of the FRMS parents/guardians advising them that the forms had been sent home with the students.

#### Clinic preparation

Many guardians did not know what vaccines their child had or was due for. People that had this question were told that they could check all vaccines that they would authorize and the child's records would be reviewed to determine which vaccines that child needed.

As the consent forms were returned, the school nurse, Dianne Conway and I reviewed the forms and compared them to available school records of vaccinations. Of the vaccines indicated by the guardian, the vaccines that the child was due for were checked on a separate sheet (appendix 3) that was stapled to each consent



form. Notes were added indicating dates of previous vaccines that meant that a child was current on a vaccine requested by the guardian. In many cases, phone calls to parents were necessary for clarification of previous vaccines or health conditions of the students. Forms were accepted through October 4, 2010—the day before the vaccination clinic.

A list of children that were to receive vaccines was provided to Mr. Handlos, the school principle who divided the students into groups according to which teacher they would be with during the clinic. A schedule was created to accomodate all students coming to get their vaccines before their lunch period.

An additional sheet asking if the student felt well that day and if they had received any vaccines within the last month (appendix 4) was attached to all consent forms. One other form, a sheet to be sent home to parents (appendix 5) was also stapled to the consent form. This sheet had the child's name, the vaccines they received, the nurses signature, and links to the Vaccine Information Statements (VIS) for all vaccines provided.

Stickers were created containing the vaccine information, manufacturer, lot number, and expiration date. These stickers were pre-stuck to most consent forms (to be retained as medical records) and to most of the sheets to be sent home to guardians (to serve as documentation of vaccination) to assist with record keeping and timeliness. Additional stickers were availabe for sheets that did not have them pre-stuck.

Prior to the clinic, the number of each vaccine to be given was counted. The vaccines for Tdap, varicella, HPV, and meningococcal disease were procured through the in-patient pharmacy at Irwin Army Community Hospital. The influenza vaccines were obtained from FRPH.

#### Clinic day

On the day of the vaccination clinic, six nurse stations were set up and staffed by Fort Riley Public Health nurses to give the vaccinations. Students came in during their scheduled block of time and were given their sheets (consent form, vaccination review card, “day of” questions for students, and the take home sheet). Students then stood in line for the next available nurse to get their vaccines. An FRMS administrator, as well as various teachers, were instrumental in “crowd control” of the students at this point. The licenced nurses reviewed the sheets each child had, administered the vaccines, and recorded the information on the consent form and the “send home record.” The child then took the sheets to the school nurse. The send home record was removed and placed in a envelope. If the HPV vaccination was given, a form provided by the vaccine manufacturer, Merck, offering email reminders for the completion of the vaccination series was also put in the envelope. The envelope was sealed and the child wrote their name on the outside of the envelope. The consent form was retained for the child’s medical records.

After the clinic, the back page of the consent form was copied for the school nurse to update the vaccination records at the school. The original forms were taken back to

Fort Riley Public Health where both sides were copied. The originals were used by FRPH to input the vaccines into the electronic medical records and the copies were given to this researcher for use in the analysis.

## Results

The analysis of the clinic was covered by Kansas State University Institutional Review Board Protocol number 5581.

### Vaccinations given at the clinic

One hundred eighty-seven students were vaccinated. Fifty-five doses of varicella vaccine, 92 doses of Tdap, 102 doses of meningococcal vaccine, 104 doses of HPV vaccine, and 157 doses of seasonal influenza vaccine were administered.

The clinic increased the vaccination rates for these vaccines in the FRMS population. Vaccination rates increased more during the time period of the vaccination clinic, as indicated in table 2, possibly due to educational materials provided during the clinic, the efforts of Dianne Conway to bring students into compliance with requirements, and parents bringing in records of vaccinations outside of school.

## Vaccination rates at Fort Riley Middle School

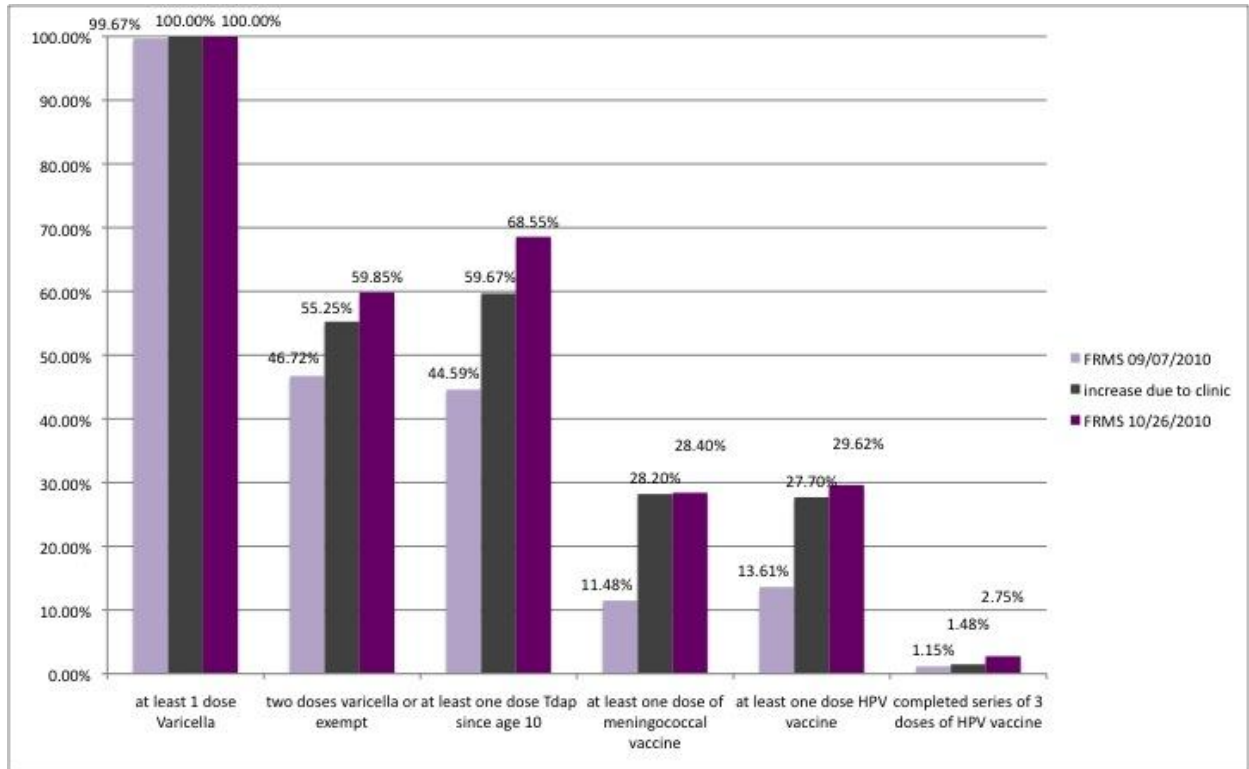


Table 2

After the vaccination clinic, the vaccination rates at FRMS rose to above the national average for the at least one dose varicella (100% at FRMS) category, two doses of varicella (59.85% at FRMS), and one dose of Tdap since age 10 (68.55%). The rates for one dose of meningococcal vaccine (28.4%) and at least one dose of human papillomavirus vaccine (29.62%) more than doubled, although not reaching the national average as indicated in table 3.

## Vaccination rates for US, KS, FRMS before vaccination clinic, and FRMS after vaccination clinic

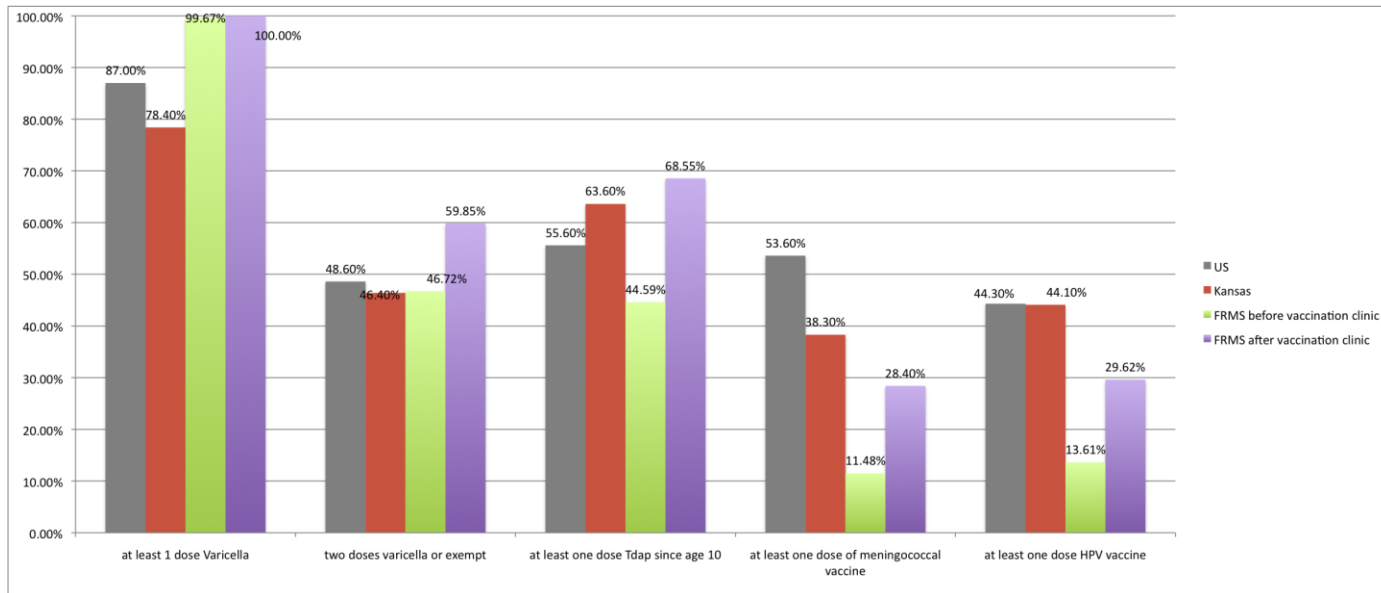


Table 3

### Statistical analysis

Not all of the 610 students at FRMS were eligible for all vaccines, some students had already received and were up-to-date on certain vaccines. For each vaccine, the number of students previously vaccinated was subtracted from 610 to give a denominator that was used to determine the percent of students vaccinated of the students eligible for that vaccination.

vaccine	number previously vaccinated	number vaccinated at clinic	total students in school	number eligible for vaccination	% of eligible vaccinated
Var2	285	52	610	325	16.0%
Tdap	272	92	610	338	27.2%
MCV	70	102	610	540	18.9%
HPV #1	83	86	610	527	16.3%

To determine if the vaccination clinic made a significant difference in the vaccination rates at FRMS, a normal approximation to the binomial was preformed. The vaccination clinic was determined to have made a difference greater than zero at a 95% confidence with a p-value of less than 0.001 for the second dose of varicella, the Tdap since age 10, the meningococcal disease vaccine, and the first dose of human papillomavirus vaccine. The statistical analysis was not conducted for the first dose of varicella or the third dose of human papillomavirus vaccine because the values were too close to 100% and zero to make statistics valid. Influenza vaccination was also not included because record-keeping (outside of this clinic) is poor for flu vaccine, it is very early in the flu season and more students will likely be vaccinated, and it would be impractical to compare to previous rates because there is a new vaccine each year.

vaccine	number previously vaccinated	number vaccinated at clinic	total students in school	number eligible for vaccination
Var2	285	52	610	325
Tdap	272	92	610	338
MCV	70	102	610	540
HPV #1	83	86	610	527

pie hat adj	standard error (se)	Z	p
0.164133739	0.020420641	8.037638731	<0.001
0.274853801	0.024140742	11.38547462	<0.001
0.191176471	0.016859499	11.33939232	<0.001
0.165725047	0.016136206	10.27038522	<0.001

A 95% confidence interval can be conducted for 2 doses varicella vaccine, one dose of Tdap since age 10, meningococcal disease vaccine, and one dose of human papillomavirus vaccine. We know exactly the how many students were vaccinated at this clinic, so we do not need to construct a confidence interval to show how many vaccinations were given. The confidence interval would be useful to

approximate the percentage of students that could be expected to be vaccinated at a similar clinic in the future. FRMS is a very unique population, therefore the 95% confidence interval would likely be most useful for FRPH if they were to conduct a similar clinic at FRMS or a USD 475 school in the future. The data could potentially also be used to approximate participation in similar clinics in other schools closely related to military installations.

Using a null hypothesis of  $\pi$  is less than or equal to zero and test hypothesis that  $\pi$  is greater than zero, we can test our hypothesis that a similar vaccination clinic would significantly increased the rate of vaccination with 95% confidence.

95% CI	$\pi$ hat adj	Lower limit	Upper limit	Ztest		
Var2	16.4%	12.5%	20.3%	8.037638731	absolute value>1.96	reject Ho ( $\pi$ hat < or = 0)
Tdap	27.5%	23.6%	31.4%	11.38547462	absolute value>1.96	reject Ho ( $\pi$ hat < or = 0)
MCV	19.1%	15.2%	23.0%	11.33939232	absolute value>1.96	reject Ho ( $\pi$ hat < or = 0)
HPV #1	16.6%	12.7%	20.5%	10.27038522	absolute value>1.96	reject Ho ( $\pi$ hat < or = 0)

For all vaccinations, we are be 95% confident that a similar vaccination clinic would increase vaccination rates.

#### Comments on the clinic

A brief review of the vaccination clinic was conducted with FRPH at one of their weekly meetings. The review was intended to discuss the clinic with the nurses involved to get other opinions on what went well at the clinic and what could be

improved. Some suggestions included a pre-clinic meeting to discuss the vaccines to be administered with the nursing staff that will be giving the vaccines; giving the “more painful” vaccinations last; and having more vaccines stocked for the event (extra for each nurses station).

To get student parent/guardian input, half-sheet questionnaires were available at some sessions of parent teacher conferences at the middle school (appendix 6.) We only got eight questionnaires back. They were all positive and indicated that the responder knew about the clinic and many parents indicated that they hoped a similar clinic would be conducted in the future. It would have been helpful to hear from parents who did not know about the clinic or chose not to participate.

However, this was not a formal inquiry and our sample size was very small (forms were only available for some sessions of conferences). As the office pointed out, our sample was biased in that parents who were more involved would be both more likely to return the consent form, participate in the clinic, more likely to attend parent/teacher conferences, and more likely to voluntarily complete the questionnaire. One comment was to have vaccination clinics in the school more often. All of the questionnaires returned indicated that the guardian was aware that the vaccine clinic was held and that they would be in favor of having their child vaccinated in school.

A brief review session with Dianne Conway (school nurse), Joe Handlos (school principle), and the administrative staff that helped with the clinic was conducted. Some comments included possibly including educational materials about vaccines,



vaccine preventable diseases, and vaccine recommendations and requirements for students in the school newsletter every other month and possibly sending short informational emails to the parents/guardians. It was suggested to possibly schedule the clinic at a different time during the school day—although there are advantages and disadvantages to any time during the school day. Also, possibly scheduling breaks for the nurses was suggested. To ease congestion at the clinic it may be helpful to schedule the different grades on different days, especially if any more students were involved. Some concern was raised about giving five vaccines all at once. Although there is no documented reason to not give these vaccines at the same time—if parents or administrators would be more comfortable with fewer vaccines—it may be beneficial to schedule two (or more) clinics at different times, if feasible.

The success of the in-school vaccination clinic was largely due to the cooperation of the FRMS staff with FRPH staff. Without the input and collaboration of both parties the clinic could not have happened.

## Discussion

This vaccination clinic at FRMS successfully increased the rates of compliance with recommended vaccinations among the middle school group. Vaccination clinics like this one are very useful to individual students and families and also to the school and the community. The greater the percentage of people in a community who are appropriately vaccinated, the smaller the chance of a disease outbreak, and if an outbreak does occur, it should be smaller than if no one were vaccinated. The H1N1

pandemic flu and the concurrent H1N1 vaccination clinics that were brought into schools and workplaces opened the door for this clinic to occur at FRMS. Hopefully, more, similar, clinics can occur in the future. School-based vaccination clinics can also help ease the burden on primary health care providers, both to provide vaccines and to treat vaccine preventable diseases. Pending changes to health care reform and greater insurance coverage for vaccinations may make vaccination clinics like this one more feasible in non-military communities. Another benefit of an in-school vaccination clinic is the educational component for both parents and students. A possibility would be to include a vaccination and vaccine-preventable disease section in a health class that would be immediately followed by an in-school vaccination clinic. This could potentially greatly improve student understanding and “stake-holding” in getting vaccinated. Additionally, ad campaigns by companies producing vaccines could help to educate parents.

Thank you to

Dianne Conway, Joe Handlos, FRMS staff, Division of Biology at Kansas State University, K-State MPH staff, my advisory committee, family, and friends

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August 2010

To: Middle School Parents & Guardians  
From: Fort Riley Middle School

RE: Vaccination Clinic at Fort Riley Middle School

Fort Riley Middle School is committed to your child's health, we believe in helping to prevent diseases that can impact your child's future. Together with Fort Riley Public Health, we are planning an in-school vaccination clinic for the Fort Riley Middle School that will provide the following vaccines for your child: whooping cough (pertussis)/tetanus/diphtheria, chickenpox (varicella), meningitis (meningococcal disease), HPV (human papillomavirus), and flu (if flu vaccine is available). These vaccines are recommended by the Centers for Disease Control and Prevention for middle school age children. These diseases are contagious, can be deadly, and are vaccine preventable. The vaccines may be given at the same time; some vaccines may require follow-up doses. The vaccination clinic will be held during the fall, 2010 at the Fort Riley Middle School.

Information on the diseases we are vaccinating against and the vaccines themselves may be found online at the following addresses.

Chicken pox (varicella) <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-varicella.pdf>

Whooping cough (pertussis/tetanus/diphtheria)  
<http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-dtap.pdf>

Meningococcal disease <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mening.pdf>

HPV (human papillomavirus) <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-gardasil.pdf>

Flu (influenza) <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-flulive.pdf>

A vaccination consent form is attached to this letter. If you have questions about which vaccinations your child is due for, please call Fort Riley Public Health at (785)239-7344 or see the school nurse.

Information about the vaccination clinic will also be available on the FRMS website.

Please return the consent form prior to the clinic. The form may be returned to the school nurse, Ms. Dianne Conway, faxed to (785)239-7463, or mailed to:

Irwin Army Community Hospital  
Department of Public Health  
600 Caisson Hill Rd  
Fort Riley, KS 66442-5037

Vaccination Consent Form

Child to be vaccinated: \_\_\_\_\_  
 Sponsor name: \_\_\_\_\_  
 Sponsor status (Rank and AD/Retired or N/A): \_\_\_\_\_  
 Sponsor SSN: \_\_\_\_\_  
 Family member number: \_\_\_\_\_  
 (example: child number one = 01, child number two = 02)  
 Date of birth of child: \_\_\_\_\_(mm/dd/yyyy)

I authorize \_\_\_\_\_ (child's name) to be vaccinated during the fall 2010 vaccination clinic at the Fort Riley Middle School against the following diseases:

(please check boxes) ☐ chicken pox (varicella) ☐ whooping cough/tetanus/  
 diphtheria  
☐ meningitis (meningococcal disease) ☐ HPV (human papillomavirus)  
☐ flu (seasonal influenza containing H1N1)

If you do not know if your child has had these vaccines previously or do not know the dates of previous vaccination you may be able to obtain this information by calling your medical home/doctor's office, speaking with the school nurse, or calling Fort Riley Public Health at (785)239-7344.

I would like to be present for my child's vaccinations, I realize that this will require an alternate date and time (check box) ☐ - otherwise vaccinations will be given during the school day.

Please answer the following questions about the child to be vaccinated.

Age: \_\_\_\_\_

Circle: male / female

YES	Is there a history of a serious reaction to a previous vaccine?	NO
YES	Is there a history of diabetes?	NO
YES	Is there a history of asthma?	NO
YES	Is there a history of cancer, leukemia, AIDS/HIV, or any immune system problem?	NO
YES	Is there a history of a damaged or lost spleen, organ/bone marrow transplant, sickle cell disease, neurologic disorders, or kidney, liver, heart, or lung problems?	NO
YES	Is there a history of Guillian-Barre Syndrome (GBS)?	NO
YES	Is there a history of a serious reaction to eggs or egg products?	NO
YES	Is there a history of allergies to MSG, arginine, gentamycin, neomycin, mercury, thimerosal, latex, or gelatin?	NO

Child name\_\_\_\_\_

YES Is there a history of other serious or life threatening allergies? NO  
Please list:

YES Is there a current long-term drug therapy including aspirin therapy? NO

YES Is there a possibility of pregnancy and/or nursing? NO

YES Is there close contact with a person who needs a protected care environment (for example, someone who has had a recent bone marrow transplant)? NO

On the day of the clinic, the child will be asked if they feel well that day and if they have received any vaccinations or antiviral medications within the past 30 days.

I was given an opportunity to review the information on the vaccination information sheets for the vaccinations included in this clinic. I am advised to seek medical attention immediately if the patient develops any of the following symptoms: difficulty breathing, wheezing, hoarseness, hives, pale skin, weakness, dizziness, or rapid heartbeat. Common side effects include soreness at the injection site, low grade fever, and muscle aches for 1-2 days.

Parent/guardian signature

Date

To view the vaccine information sheets, please see the links below.

Chicken pox <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-varicella.pdf>

Whooping cough (pertussis/tetanus/diphtheria)

<http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-dtap.pdf>

Meningococcal disease <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mening.pdf>

HPV <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-gardasil.pdf>

Flu <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-flulive.pdf>

**Please do not mark in the area below. Medical staff only**

Administered\_\_\_\_\_ Gardasil (HPV) 0.5 mL IM Administered\_\_\_\_\_ Varivax 0.50 mL SQ

Injection Deltoid Lt Rt Injection Deltoid Lt Rt

Manuf\_\_\_\_\_ Manuf\_\_\_\_\_

Lot #\_\_\_\_\_ Lot #\_\_\_\_\_

Exp Date\_\_\_\_\_ Exp Date\_\_\_\_\_

\_\_\_\_\_(nurse signature) \_\_\_\_\_(nurse signature)

Administered\_\_\_\_\_ Adacel (DTAP) 0.5 mL IM or Boostrix (TDAP)

Injection Deltoid Lt Rt

Manuf\_\_\_\_\_

Lot #\_\_\_\_\_

Exp Date\_\_\_\_\_

\_\_\_\_\_(nurse signature)

Administered\_\_\_\_\_ Meningoccal (Menactra/MCV4 0.5 mL IM / Menomune/MPSV 0.5 mL SQ)

Injection Deltoid Lt Rt

Manuf\_\_\_\_\_

Lot #\_\_\_\_\_

Exp Date\_\_\_\_\_

\_\_\_\_\_(nurse signature)

Administered\_\_\_\_\_ 0.5 mL IM infection Deltoid Thigh Lt Rt

Administered\_\_\_\_\_ 0.2 mL Flumist intranasally (0.1 mL each nare)

Manuf\_\_\_\_\_

Lot #\_\_\_\_\_

Exp Date\_\_\_\_\_

\_\_\_\_\_(nurse signature)

IMMUNIZATION CONSENT FORM (TEST FORM-2010)

**Appendix 3**

Child name\_\_\_\_\_

☐ Tdap

☐ Varicella

☐ Meningococcal

☐ HPV

☐ Flu

Notes:

## *Appendix 4*

Questions to ask the student on October 5, 2010

Yes    Are you feeling well today?    No

Yes    Have you received any vaccines within the last month?    No  
          If yes, which vaccines and when? \_\_\_\_\_



## Appendix 5

October 5, 2010

Fort Riley Middle School Parent/Guardian;

Your child \_\_\_\_\_ received the following vaccinations at our vaccination clinic today.

- ☐ chicken pox (varicella)
- ☐ Tdap (tetanus/diphtheria/pertussis)
- ☐ meningitis (meningococcal disease)
- ☐ HPV (human papillomavirus)
- ☐ flu (seasonal influenza containing H1N1)

The consent form that you completed previously determined which vaccines your child received today. If a child's records indicated that they were current for a particular vaccine authorized by you, the vaccine was not given.

Please be aware that the HPV vaccination is a three dose series. The second dose should be one-two months after dose #1 and the third should be dose six months after dose #1. If your child received dose #1 or dose #2 today, you will need to get the rest of the series from your doctor, medical home, or the immunization clinic.

For more information on these vaccines and the diseases they help to prevent, please see the vaccine information sheets at the links below.

Chicken pox <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-varicella.pdf>

Whooping cough (pertussis/tetanus/diphtheria)

<http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-dtap.pdf>

Meningococcal disease <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mening.pdf>

HPV <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-gardasil.pdf>

Flu (intranasal) <http://www.cdc.gov/vaccines/Pubs/vis/downloads/vis-flulive.pdf>

Flu <http://www.cdc.gov/vaccines/Pubs/vis/downloads/vis-flu.pdf>

The vaccine information sheets also provide information on possible side effects of the vaccines. If you believe your child is experiencing a *severe* reaction to a vaccine, please call you medical home or doctor's office or go to the emergency room.

## *Appendix 6*

Follow-up questionnaire to the in-school vaccination clinic held on Oct 5, 2010

Were you aware that a clinic offering vaccinations recommended for middle school age children was held at Fort Riley Middle School? yes/no

If so, how did you hear about the clinic?

Did your child participate in the in-school vaccination clinic? yes/no

If so, do you feel that the clinic was helpful in attaining vaccines for your child? yes/no

If your child did not participate in the vaccination clinic, why not?  
(examples: my child had already received the vaccines offered, I did not know if my child needed these vaccines, I want to take my child to their physician's office for vaccines, or I did not know about the clinic)

If a similar clinic were conducted in the future, would you choose to have your child participate? yes/no

Any suggestions or comments? (please use back of page if necessary)

Thank you for your time in completing this survey.

Fort Riley Middle School & Fort Riley Public Health