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Evaluating a High School MRSA Prevention Program: A Case Study

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Evaluating a High School MRSA Prevention Program: A Case Study

By
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Executive Summary

A Kentucky high school football team recently experienced an outbreak of Methicillin-resistant Staphylococcus aureus (MRSA). This prompted a crucial observation by the school nurse. She identified limited knowledge regarding MRSA among key decision-makers for the student athletes, which included coaching staff and athletic trainers. In response, an online training module was designed to empower these decision-makers with the knowledge they need to prevent MRSA infection and act if suspected. The Lexington Fayette County Health Department (LFCHD) assessed the initial implementation of the online MRSA prevention training module. The evaluation identified two key recommendations. The first was to implement the training module for the football staff and continue to evaluate its effectiveness. The second recommendation was to implement the training modules for wrestling staff with improved program evaluation. These findings will be used to tailor the training module and its delivery. Despite limitations in initial data quality, the evaluation of the LFCHD's online training module offered valuable insights. These evaluations can be utilized to inform the improvement of the program's ability to share knowledge of MRSA and to strengthen prevention strategies within a high school setting.

Introduction

MRSA

Methicillin-resistant Staphylococcus aureus (MRSA) is a bacterium that is difficult to treat due to its resistance to many antibiotics. MRSA is most known for causing skin, lung, and other infections (Lee at al., 2018). These infections can increase the risk of sepsis, a cascade of organ failure that can be potentially fatal. A concerning study by Delaney et al. (2008) found that within one year of MRSA infection, the mortality rate was significantly higher compared to patients without MRSA. The study revealed a striking 21.8% death rate among patients with MRSA compared to only 5% in the non-MRSA group. Furthermore, the same study found an adjusted hazard ratio of 4.1 (95% CI [3.5–4.7]), indicating a significantly increased risk of death for patients diagnosed with MRSA in the community.

MRSA infections can show varying symptoms depending on the person and location of the infection. Common signs include swelling, pus drainage, fever, pain, and redness at the infection site (*MRSA*, 2019). Because many skin infections look similar, diagnosing MRSA often requires a lab test. For instance, spider bites can easily be mistaken for MRSA (Dominguez, 2004). Healthcare providers typically collect a fluid sample to diagnose MRSA. This can be done through a wound swab, nasal swab, blood test, or urine test. A newer test, called the cobas® vivoDx MRSA test, uses a nasal swab and can provide results in as little as 5 hours (McClure et al., 2020; Voelker, 2020).

These infections can spread in communities through contact with people or objects that have the bacteria on them. Crowded environments, skin-to-skin contact, and sharing

equipment or supplies can increase your risk. To minimize the risk of contracting a MRSA infection, it is recommended to uphold proper hygiene practices, adequately cover any wounds, refrain from sharing personal items, and promptly seek medical attention if there are signs of an infection.

Student Athletes

Participation in sports, such as football, wrestling, and rugby, can increase an athlete's risk of having a MRSA infection (Benjamin et al., 2007). This is because of the close contact they have with each other, sharing items like towels, and getting cuts and scrapes. They also might not be able to shower right after exercise. MRSA can spread around locker rooms and to other students in the school. Community acquired MRSA have been associated with significant levels of morbidity, with up to 70% of athletic team members with an infection that eventually require hospitalization or intravenous antibiotics (Redziniak et al., 2009).

Adapting policies and programs for high school students, in particular, can be a challenging endeavor due to the complex relationship among stakeholders and educational landscapes. Implementing changes in policies requires navigating through the diverse needs and perspectives of students, teachers, administrators, and guardians. Evaluating programs that impact minors is further complicated by variations in literacy levels, engagement, and guardian influence. For instance, student athletes are influenced by both school staff and guardians, who may have varying viewpoints on MRSA prevention strategies. To address this, the school must equip their staff with the knowledge and confidence to effectively discuss MRSA, its dangers, and preventive strategies to minimize risk.

The Football Team

A Kentucky high school football team suspected a spider bite outbreak after summer camp, but the school nurse suspected MRSA (*MPH Health Management and Policy Capstone: A Case Study in Program Evaluation [MPH HMP Capstone*], 2024). The regional epidemiologist was notified, and the school took steps to educate the community and staff, who were unaware of proper infection control protocols.

To prevent additional MRSA outbreaks, a county-wide education program informed high school sports teams about MRSA, its symptoms, and prevention strategies. It was delivered at practice sessions with handouts for locker rooms. The program reached over 80 teams in 3 months. The original high school adopted a "no-practice-with-draining-wounds" policy. Trainers, coaches, and nurses would identify affected players who would miss practices or games until the wound healed.

The Program

An online training module was then designed for Fayette County Public School coaches, trainers, and school health personnel to increase knowledge of proper ways to prevent outbreaks and how to respond if suspected (*MPH HMP Capstone*, 2024). No other information was provided on the design of this module. The Lexington Fayette County Health Department (LFCHD) was tasked with evaluating the program.

Evaluation Method

The CDC's Framework for Program Evaluation in Public Health is the recommended approach for the LFCHD to evaluate the online training module (*Framework for Program Evaluation in Public Health*, 1999; *MPH HMP Capstone*, 2024). This framework outlines steps and standards for conducting evaluations that are useful, feasible, ethical, and accurate. By following these guidelines, public health professionals can gain a deeper understanding of their programs' effectiveness and make data-driven decisions for improvement. Importantly, the framework emphasizes ongoing evaluation involving all stakeholders, not just experts. This collaborative approach helps ensure program effectiveness and justifies resource allocation. The framework includes standards for engaging stakeholders, describing the program, evaluation design, gathering evidence, justifying conclusions, and sharing lessons learned.

Engaging Stakeholders

Building a strong and effective MRSA education module requires a collaborative effort. Through partnership with a diverse team of stakeholders and community partners, perspectives from various angles will be included. This reflects the established value of stakeholder involvement in decision-making (Weber & Sreeramoju, 2018). Each stakeholder brings a unique perspective, ensuring a holistic assessment that captures all crucial elements and fosters a well-rounded understanding of program effectiveness and its impact.

There are three main ways that stakeholders can be involved in process evaluation (*MPH HMP Capstone*, 2024). This includes program operations, those served or impacted, and primary users of the evaluation. For instance, those involved in program operations may include the LFCHD, FCPS, regional epidemiologists, local healthcare providers, and the athletics department. Those served or impacted by the program may include the coaching staff, athletic trainers, health personnel, athletes, and the student athlete families. Primary users of this evaluation could be FCPS, LFCHD, and the Kentucky High School Athletic Association. Each of these roles have more specifically been outlined in Table 1.

Table 1
Roles of Stakeholders

Enhance credibility of the program	• District Staff (Superintendent, Associate Superintendents [Activities, Human Resources, Business], Directors, School Board Members) • School Administration (Principal, Deans, Directors, Assistants) • School Staff (Nurses, Educators, Assistants, Custodians, Social Work, Mental Health Professionals) • Athletics Staff (Directors, Assistants, Coaches, Trainers, Educators) • Kentucky High School Athletic Association (including opposing teams) • News Team, Radio, and Other Media (Journalists, Podcasts, Influencers) • Providers (Physicians, Nurses, Technicians, Urgent Care, Medical Directors) • Government **(**Lexington-Fayette Urban County, State Department of Education, State Department of Health, Mayor, City Council, other Legislatures). • Professional organizations (American Academy of Pediatrics, National Association of School Nurses, National Athletic Trainers' Association, School Superintendents Association, American School Health Association)
Implement the program changes	• School Administration (Principal, Deans, Directors, Assistants) • School Staff (Nurses, Educators, Assistants, Custodians, Social Work, Mental Health Professionals) • Athletics Staff (Directors, Assistants, Coaches, Trainers, Educators) • Kentucky High School Athletic Association (Including Opposing Teams) • Study Body (Athletes, Students, Student Government • Local community recreation centers and gyms • Hospital Systems (Infection Prevention and Control Teams, UK HealthCare, Baptist Health, CHI Saint Joseph, Local Labs) • Local Businesses (Hygiene, Uniform, Equipment, Laundry, Technology)
Advocate for changes	• School Administration (Principal, Deans, Directors, Assistants) • School Staff (Nurses, Educators, Assistants, Custodians, Social Work, Mental Health Professionals) • Athletics Staff (Directors, Assistants, Coaches, Trainers, Educators) • Kentucky High School Athletic Association (including opposing teams)

	• The Community (Family, Guardians, Parent-Teacher Association) • Local community recreation centers and gyms • News Team, Radio, and Other Media (Journalists, Podcasts, Influencers) • Insurance Companies (Anthem, Aetna, Humana, UnitedHealthcare, Medicare, Medicare) • Hospital Systems (Infection Prevention and Control teams, UK HealthCare, Baptist Health, CHI Saint Joseph) • Providers (Physicians, Nurses, Technicians, Urgent Care, Medical Directors) • Government **(**Lexington-Fayette Urban County, State Department of Education, State Department of Health, Mayor, City Council, other Legislatures). • Professional organizations (American Academy of Pediatrics, National Association of School Nurses, National Athletic Trainers' Association, School Superintendents Association, American School Health Association)
Fund, authorize, or expand the program	• District Staff (Superintendent, Associate Superintendents [Activities, Human Resources, Business], Directors, School Board Members) • School Administration (Principal, Deans, Directors, Assistants) • Athletics Staff (Directors, Assistants, Coaches, Trainers, Educators) • Kentucky High School Athletic Association (including opposing teams) • Fayette County Sheriff's Office • Public Health Departments (Local, Kentucky Departments for Public Health, Federal) • Insurance Companies (Anthem, Aetna, Humana, UnitedHealthcare, Medicare, Medicare) • Hospital Systems (Infection Prevention and Control teams, UK HealthCare, Baptist Health, CHI Saint Joseph, Local Labs) • Government **(**Lexington-Fayette Urban County, State Department of Education, State Department of Health, Mayor, City Council, other Legislatures). • Local Businesses (Hygiene, Uniform, Equipment, Laundry, Technology) • Professional organizations (American Academy of Pediatrics, National Association of School Nurses, National Athletic Trainers' Association, School Superintendents Association, American School Health Association)

Note. Stakeholders may have multiple roles.

Stakeholder Concerns

Several stakeholders have raised concern regarding the MRSA educational module (*MPH HMP Capstone*, 2024). Athletes fear missing practice or games for skin issues. School nurses worry early detection might be difficult due to initial rash presentation. Coaches are concerned about unnecessarily sidelining players suspected of infection. Athletic trainers fear spending time on uninfected athletes, compromising care for injured ones. Parents suspect preferential treatment based on coach discretion. Social media may exaggerate the risk, leading to stigmatization of potentially infected athletes. Additionally, identifying the football team as the initial source of infection could have had significant negative impacts, including cancelled games, lost revenue, and strained relationships. Each of these concerns should be considered as the LFCHD evaluates the program and partners with various stakeholder groups.

Stakeholder Objectives

To maximize the impact and lasting effectiveness of this MRSA training module, all stakeholders should be engaged. This includes acknowledging that different groups and individuals may have varying roles and commitment levels. These objectives serve as a guide to ensure the module's success and to promote consistent implementation of the education module.

Athletic directors and assistants from a high school in Illinois, noted past challenges with educational program engagement and consistency (Amy Nickel, personal communication, March 10, 2024). These objectives are designed to optimize the training module's impact on participant knowledge and behavior related to MRSA prevention. This option focuses on measuring the effectiveness of the module on participant learning and behavior change.

Objective 1: Conduct a Focus Groups

Suggested Stakeholders. Coaches, nurses, athletic trainers, other athletic department staff, designer of training module, educators, custodial team, athletes, students, guardians, community members, local labs, local healthcare systems, public health departments employees, and other interested stakeholders interested in assisting.

Action 1a. Plan for focus group following intervention. Consider holding event in the afternoon. Ensure coverage and appropriate are timing for unique stakeholders. Provide light refreshments if budget allows.

Action 1b. Contact every stakeholder in Table 1 for interest. Ensure there are at least multiple representatives from coaches, nurses, athletic, trainers, custodial teams, and students. Have smaller and multiple meetings, if needed, to ensure all voices are heard.

Action 1c. Create and design thought provoking questions. Prepare modality to record and analyze this information. Have the regional epidemiologist and the LFCHD review findings in conjunction with athletic department leadership.

Objective 2: Form Advisory Board

Suggested Stakeholders. Public health department (including epidemiologist), athletic department staff, public health officials, football coaches, school nurse, student athletes, local providers, and other interested stakeholders interested in the position.

Action 2a. This committee will continuously evaluate the online training module. This board will begin by forming a feedback mechanism with the health department to understand effectiveness of the training module before, during, and after its implementation.

Action 2b. Gather stakeholders and determine weekly meeting schedule. These schedules may move to biweekly and then to monthly meetings, following successful implementation and outcomes. Success defined by action 2a.

Objective 3: Conduct Engagement, Technology, and Education Seminar

Suggested Stakeholders. Educators, health providers, nurses, school technology, students, athletics department, public health officials, coaches, other interested stakeholders interested in assisting.

Action 3a. Plan meeting in advance and ensure excusals are allowed. Provide light refreshments if budget allows. Ensure all voices are heard.

Action 3b. Use outcomes of meeting to continue developing the training module to be more interactive, engaging, and informing. For instance, utilize program evaluations findings to inform modalities of adapting programs to promote interdisciplinary perspectives or a variety of media tools (Huang, 2005).

Objective 4: Form Regulation Board

Note. While outside the scope of evaluating the training modules, forming this board will ensure efforts made in adapting these modules and their impact is continuously implemented. While objectives 1 through 3 aim to analyze this training program to ensure all voices are heard, it is important to acknowledge that it is difficult to implement change for everyone.

Suggested Stakeholders. Kentucky High School Athletic Association, all athletics department personnel, local healthcare providers, public health officials, local labs, custodial team, law enforcement and other interested stakeholders interested in assisting.

Action 4a. Form policies related to training modules and assessment of understanding. This may include when the module must be completed, when, and what are passing scores.

Action 4b. Create policies and mechanisms to ensure measures learned in training modules are taken. Consider placing fail proof mechanisms that promote infectious disease cleaning and follow through of concerns.

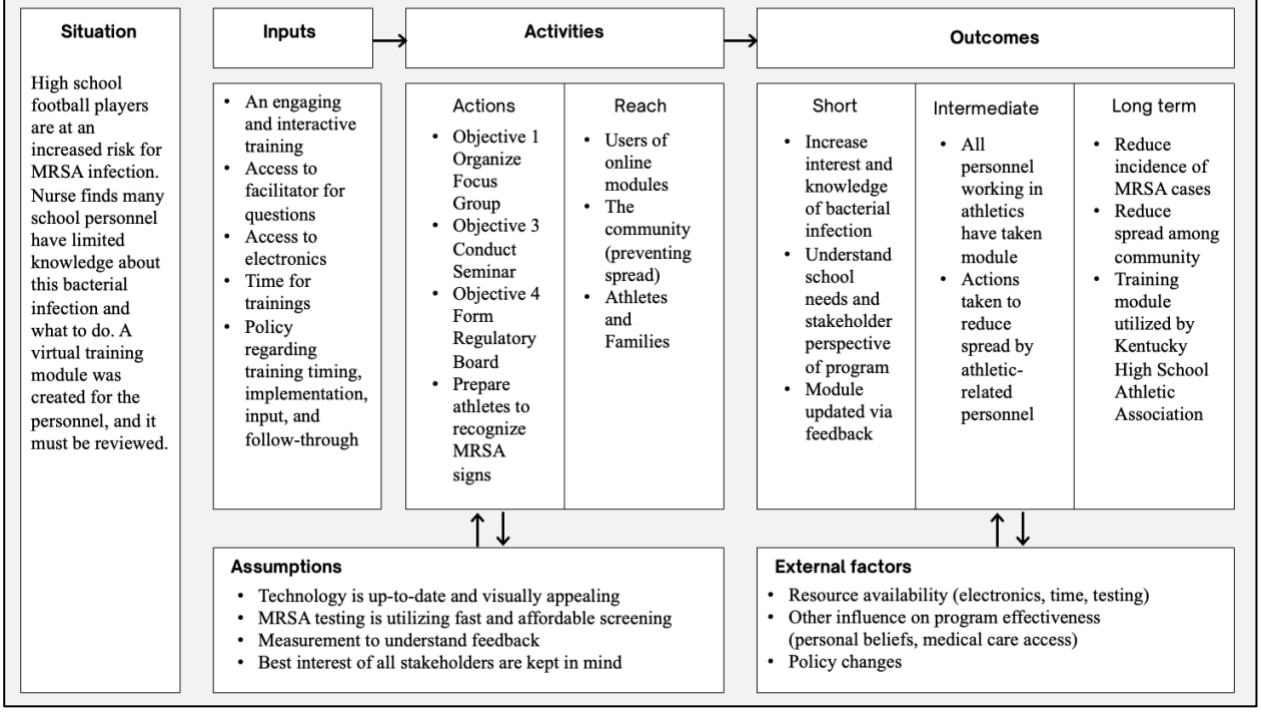
Action 4c. Create policies and mechanisms if guidelines are not practiced or followed appropriately.

The Lexington-Fayette Health department recognizes that time commitment will vary by individual role. The Health Department, school administration, and athletics will regularly evaluate program effectiveness upon completion of each program. Students and families may participate in occasional surveys or focus groups. Health providers will be involved for testing and health-related guidance. Custodial staff and coaches will meet regularly with athletics to track progress and ensure safe practices. The department's priority is to create a space where all voices are heard, and individual preferences are accommodated and respected.

Describing the Program

The Fayette County Public Schools (FCPHS) use a series of online training modules to trains coaches, athletic trainers, and school health personnel about preventing and responding to MRSA outbreaks among athletic teams (*MPH HMP Capstone*, 2024). The program is designed to ensure timely reporting and action in the event of an outbreak. A logic model was utilized to visually map elements of the program, such as inputs, activities, and outputs, to guide the planning and evaluation of the program (Figure 1).

Figure 1. Logic Model



Focusing on the Evaluation Design

The purpose of this evaluation is to assess the effectiveness of the online training modules utilized by FCPHS to provide education about MRSA to coaches, athletic trainers, and other school health personnel. Since the program has yet to be implemented, the Lexington-Fayette County Health Department (LFCHD) will work alongside FCPHS to evaluate the program before, during, and after its implementation. Thus, both process and outcome evaluations will be utilized to inform the teams of the module effectiveness.

The users of this evaluation program will be the LFCHD and the high's school's athletic department. Upon successful adaption of the program, users could be the Kentucky High School Athletic Association for additional high schools across the state that have low MRSA literacy levels and MRSA infections. The Athletic Director will be the main user of the evaluation, in partnership with the health staff, district leadership, and the health department. If provided with resources mentioned in assumptions and external factors, the process and outcome should be reasonably assessed by the staff members.

The evaluation plan can assess data and feedback points to determine effectiveness and success of implementation. Process evaluation will be measured with questions to involve stakeholders to understand unique perspectives and general success. The outcome evaluation will utilize other feedback mechanisms, such as a Likert-scale survey design. All findings will inform immediate and future adaptions of the online training module. Ideally, the following items are the minimum level of information to be collected:

- Module knowledge testing before and after the module
- Confidence in identifying MRSA and taking action on suspected cases
- Percent completing program
- General feedback on design and implementation of programs
- Change in sanitary practices (showering, cleaning of equipment and locker rooms)
- MRSA rates and outcome data

Process Evaluation

The process will be utilized to understand whether this program was implemented in the way that it was intended. The LFCHD will leverage a continuous program evaluation to ensure the online training is delivered as intended. This evaluation, conducted throughout the training modules, will identify strengths and weaknesses, allowing for adjustments to maximize program effectiveness. The following questions should be asked throughout the implementation process.

- Which program components were implemented as intended and which were not?
- Did the recruitment methods reach both individuals who are interested and those required to participate?

- Which program elements are most effective at equipping staff members with the confidence to identify and report suspected MRSA cases?
- How effectively did the virtual training program engage participants and ensure they completed the modules with a strong understanding of the material on MRSA?
- How user-friendly and accessible was the virtual training platform for staff members? Did the platform provide a smooth and positive learning experience?

Outcome Evaluation

Following completion of the first training module group, the LFCHD will conduct an outcome evaluation to assess the program's short-term and intermediate effects on coaches, athletic trainers, and other school personnel. This evaluation will measure progress within the target population and provide valuable feedback and recommendations to refine both the program's design and delivery. The following questions should be asked following the completion of the learning modules to participants. It is recommended that the questions are presented at the beginning of the courses to create a baseline.

- On a scale from 1 to 10
    - Rank your confidence in your ability to recognize a case of MRSA.
    - Rank your confidence in your ability to report a case of MRSA.
    - Rank your confidence in your ability to discuss program policies of MRSA.
    - Rank your confidence in your ability to access MRA-related resources.
- Has there been a change in MRSA case reporting?
- Were the resources available to users of the program to create change (consider computers, showers, laundry machines, soaps)
- Has there been a change in MRSA prevention strategies, such as showering or cleaning high-contact items?
- Has the incidence MRSA been reduced in the football program and in the school?
- Have the levels of sepsis or deaths related to MRSA been reduced in the school and community?

Gathering Credible Evidence

To gain a comprehensive understanding of program effectiveness, individual evaluation questions prompts were further explored (Table 2). This involved identifying relevant indicators that can be measured, along with potential data sources and monitoring methods to track indicators over time.

Table 2
Evaluation Questions

	Evaluation Questions	Indicators	Data Sources/Methods
Question 1	How user-friendly and accessible was the virtual training platform for staff members? Did the platform provide a smooth and positive learning experience?"	Log in time, time on screen, interaction points, eye tracking, history, and help clicks (compare interactions between platforms) Percentage who completed program Pre- and post-training quiz scores	Conduct focus groups Utilize data analytics Review ticket logs Conduct A/B Testing (compare platforms) Literacy testing Usability testing with participants
Question 2	Do you feel more confident identifying MRSA and acting if suspected?	Pre- and Post-test literacy scores Survey on content clarity MRSA incidence levels MRSA outcome measurements Bacteria samples on common points Training completion rates Focus group themes % Athletes showering after practice Bacteria levels	Conduct focus groups Pre- and Post- Training Likert Surveys (confidence levels, MRSA literacy) Collect MRSA incident reports before and after Monitor staff engagement with resources Compare reporting to those with and without training Change in sanitary practices

Justifying Conclusions

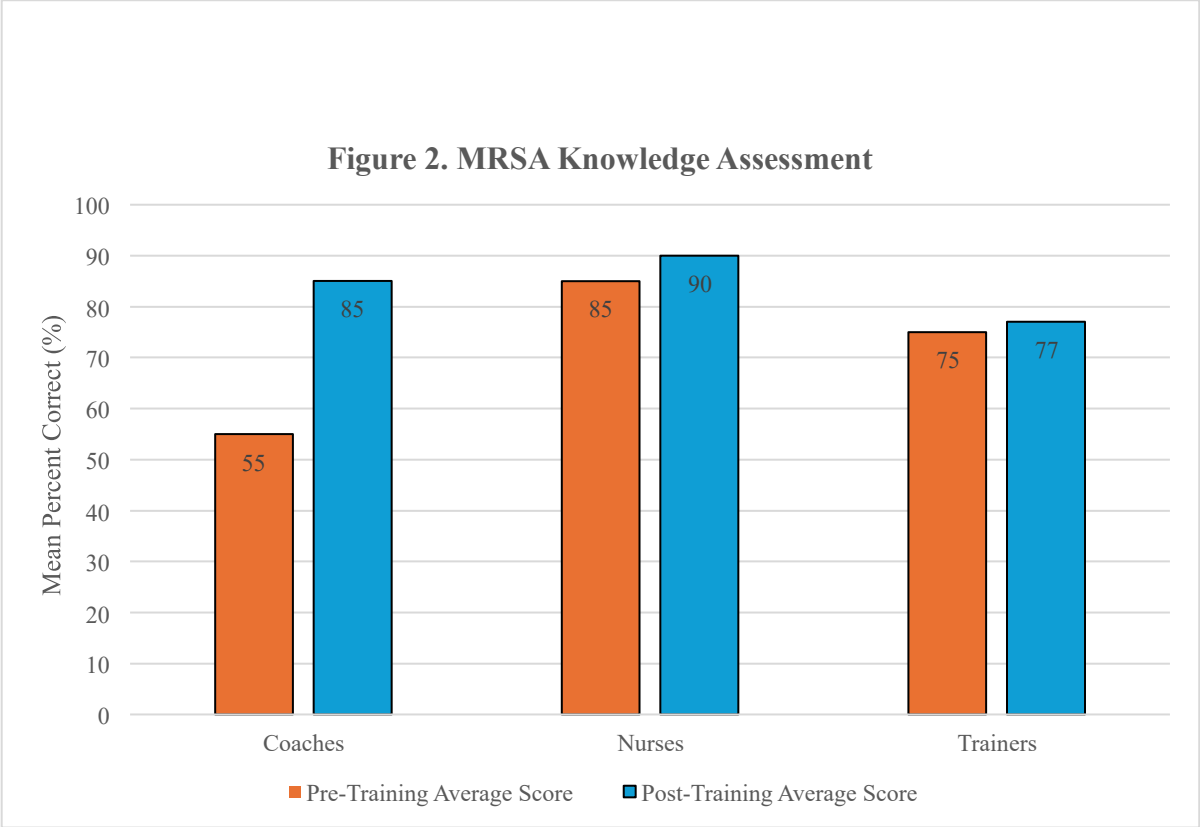


Figure 2 demonstrates the average percent correct before and after training modules. (*MPH HMP Capstone,* 2024)

In response to inquiries from the LFCHD director and FCPS leadership regarding the effectiveness of the online MRSA training module, the data presented in Figure 2 demonstrates an increase in the mean percentage of correct responses among coaches following program completion. While a positive trend was also observed for nurses and trainers, the magnitude was less pronounced. Based on the program's evaluation results, the LFHCD proposes the following actions to further enhance the training module's effectiveness.

Recommendation 1

It is recommended that this Kentucky high school implements the training modules for football coaching staff.

Figure 2 illustrates a substantial increase in the mean percentage scores achieved by the coaching staff following the online training program. Nurses and athletic trainers exhibited a more modest improvement. Notably, post-program scores reveal that nurses

maintained the highest performance on the training modules, followed by the coaching staff and then the athletic trainers.

While the significance of these findings remains unclear due to limitations in data availability and participant feedback, the potential benefits of the program in mitigating the risk of illness likely outweigh potential drawbacks. To gain comprehensive understanding of the program's effectiveness and identify areas for improvement, it is recommended to utilize the second recommendation to inform program changes.

While the potential benefits of extending the online MRSA training module to coaching staff are recognized, a more data-driven approach is necessary before expanding the program. Thus, the propriety was specifically considered. It is possible that football and other coaching staff may have benefited from this training module. Since coaching staff are some of first people of authority in the school to notice or report MRSA, they hold a unique role. Other stakeholders may include those impacted by their decision making, such as the athletes, coaches in other athletic programs, the athletic department, and more.

Thus, it is recommended this training module proceeds as a yearly training course in the summer before school starts. However, it is expected that timing for this training will be adapted following results from subsequent program evaluations. It will continue as an online program where staff are provided enough time at work to complete each of the training modules with care. Future program evaluations should consider evaluating differences among refresher versus full courses based on new staff and timelines.

MRSA poses a significant health risk, while the current data on the online training module is limited, the improvement in scores among coaches are encouraging. Considering the potential impact of MRSA, implementing the program with a focus on continuous improvement is the recommend course of action. By gathering more comprehensive data on user experience and real-world application, the information can be used to refine and strengthen the program. It can be utilized to ensure it effectively prepares staff members with the knowledge and skills necessary to handle suspected and identified MRSA cases.

Recommendation 2

It is recommended that the LFCHD and FCPS conducts the online training module for the high school’s wrestling staff. This program will specifically focus on collecting high quality data for all athletic trainers, nursing staff, and coaches (see recommendation 1) However**,** the program evaluation process should be particularly focused on identifying the specific needs of athletic trainers and nursing staff.

While the observation that nurses and athletic trainers exhibited high baseline scores followed by slight improvement is interesting, the significance of this finding requires further investigation. Generalizing these results without additional data collection could be misleading. Understanding the program's impact on broader staff knowledge and its translation to real-world practices, such as MRSA identification and student care protocols, is crucial for a comprehensive evaluation. The absence of strong negative feedback suggests the program was not completely ineffective, but more data is necessary to definitively determine its overall validity. Since athletes who engage in wrestling are also at increased risk for contracting MRSA (Lindenmaye et al., 1998), this group will be utilized for the next program evaluation to provide additional context.

To gain a richer understanding of the program's effectiveness for these providers with healthcare experience, it is recommended that additional data be collected through focus groups, tracking actionable changes in practice, and comparing the program to those used by community providers. Additionally, the training content should be reviewed to ensure its relevance to the existing healthcare experience of participants and tailored to be more career specific. This may address potential issues like boredom or skimming, as a more engaging and relevant program could lead to deeper engagement and application.

Data in Table 2 can assist in guiding the data that will be collected for the next MRSA online training group. This information will include:

- Pre- and Post- Training Likert Surveys Scores (including number of participants)
- Usability Testing (including time spent on module sections, usage of “help” button)
- Collect percent of module participants who completed each section
- Focus groups to explore common themes and other strengths/weaknesses
- Compare incident rates of MRSA in all wrestling athletes and in school
- Compare MRSA reporting rates to previous reporting and incidence rates
- Changes in prevention strategies, such as showering and cleaning

Specifically, it would also be helpful to understand the sample size and characteristics of participants involved (e.g., number of participants, staff roles, prior experience with MRSA, and actionable outcomes). Furthermore, information regarding the assessment tool used to measure knowledge acquisition (e.g., questions asked, formatting) would be essential to evaluate the validity and reliability of the findings. By gathering this additional data, a richer understanding of the program's effectiveness and identify areas for improvement may become clearer.

This recommendation is realistic as employing a multifaceted approach that considers both user experience, learning outcomes, and actionable changes, a richer understanding of the online MRSA training module's strengths and weaknesses can be identified. This

will allow us to identify areas for potential improvement and ensure the program's continued success in equipping staff with the knowledge and skills necessary to effectively identify MRSA.

Given the limitations of the initial study and the minimal risk involved, re-running the evaluation with a more robust design appears feasible. The training resources and infrastructure are already in place, and the potential benefits of a truly effective program outweigh any minor training burden. This approach allows us to collect meaningful information and make informed decisions about tailoring the online MRSA training module to effectively equip users with the knowledge and skills they need.

Additionally, the participants were healthcare providers (nurses and athletic trainers) who may already possess a baseline knowledge of MRSA. Tailoring the training to address their existing expertise and specific needs, perhaps through a more interactive format, should be considered. Given their critical role in decision-making regarding MRSA testing and treatment for students, coaches, athletic departments, and the broader community, ensuring their comprehensive understanding of MRSA is crucial. It is recommended the health department work alongside the athletic department to collect measurable items, provide detailed reports, and run the additional pilot evaluation for wrestling staff. This recommendation will provide additional information for both wrestling staff, but also for nurses and athletic trainers to inform future evaluations of the program.

To ensure the online MRSA training module effectively equips this critical stakeholder group, it is recommended to gather more information through surveys, focus groups, and tracking of real-world application in MRSA identification and reporting protocols. Based on the feedback received, we can explore the feasibility of implementing the program as a yearly training or refresher course for at risk sport teams, such as football and wrestling. The possibility of creating separate, specialty-focused modules for different healthcare roles could be investigated. Ultimately, a data-driven approach that prioritizes continuous program improvement will ensure the online MRSA training modules offer the most effective support for staff in combating MRSA within the Kentucky high school setting, benefiting not only the football team but potentially all athletic teams across the state.

Ensuring Use and Lessons Learned

The evaluation of the online training module identified many limitations, including missing information. This led the department to adopt a cautious approach regarding broader program implementation. However, the following lessons offer valuable insights for next steps.

- Understand need for data completeness, as missing data hindered the potential for true program improvement

- Include various stakeholders and gather their opinions and perspectives
- Prepare for continuous improvement

Thus, in order to successfully implement changes to the program evaluation, each stakeholder has a unique role in this change process. Actions for successful implementation have been listed in Table 3.

Table 3
Ensuring Use Action Items

Item #	Who	What	When
1	Lexington Fayette County Health Department FCPS Athletics Staff	A detailed report of findings outlining all findings will be provided to each stakeholder group: School Staff, Athletes and Families, and the Community.	Following Completion of Evaluations
2	Lexington Fayette County Health Department FCPS Athletics Staff FCPS District Staff	A Tableau dashboard will be created for the FCPS athletics page to monitor MRSA cases. All infectious disease privacy guidelines will be followed.	Every Week
3	Kentucky High School Athletic Association	A state taskforce will begin building relationships in program to prepare program expansion.	Every 6 months
4	Lexington Fayette County Health Department	A stakeholders taskforce will be created to keep community informed of infection risk and to ensure voices are heard.	Once a Month

Stakeholder Engagement

To ensure transparency and engagement, a tailored communication plan has been developed for each stakeholder group, while another process improvement evaluation begins (Table 4). These plans detail the specific information to be communicated, the frequency of updates, and the preferred channels for reaching each group.

Table 4
Individual Stakeholder Engagement Plan

Stakeholder	What	When	How Often
Lexington Fayette County Health Department (LFCHD)	• Process and outcome evaluation • Collect other qualitative and quantitative data (focus group) • Change implementation • Prepare training guidelines • Track MRSA rates • Share information and prevention strategies about MRSA • Adapt training module as needed • Communication with community and other organizations • Form regulation board	Before, During, After Evaluation	Daily and weekly
FCPS District Staff (superintendents, directors, school board members)	• Change implementation • Prepare training guidelines • Share findings and spread awareness • Conduct Engagement, Technology, and Education Seminar	Before, During, After Evaluation	Weekly
FCPS School Administration (principal, deans, directors, assistants)	• Change implementation • Prepare training guidelines • Adapt training module as needed • Share information and prevention strategies about MRSA • Conduct Engagement, Technology, and Education Seminar • Form regulation board	Before, During, After Evaluation	Weekly
FCPS Athletics Staff (directors, assistants, coaches, trainers, educators, school nurse)	• Process and outcome evaluation • Change implementation • Prepare training guidelines and policies • Track MRSA rates • Share information and prevention strategies about MRSA • Adapt training module as needed	Before, During, After Evaluation	Daily and weekly

	• Communication with school staff, students, district, families, and LFCHD • Conduct Engagement, Technology, and Education Seminar • Form regulation board		
Centers for Disease Control and Prevention	• Track MRSA rates • Compare efficacy of MRSA training • Share information and prevention strategies about MRSA • Share information and prevention strategies about MRSA • Share MRSA-related resources • Consider implementation of widespread MRSA trainings for at risk settings	After Evaluation	Biweekly
Kentucky High School Athletic Association	• Change implementation • Track MRSA rates across all schools • Share information and prevention strategies about MRSA • Share information and prevention strategies about MRSA • Share MRSA-related resources • Consider implementation of widespread MRSA trainings for at risk settings • Form regulation board	Before, During, After Evaluation	Weekly
News Team, Radio, and Other Media (Journalists, Podcasts, Influencers)	• Share information and prevention strategies about MRSA • Share MRSA-related resources	After Evaluation	Monthly
Local healthcare providers (physicians nurses, technicians, assistants)	• Process and outcome evaluation • Change implementation • Share information and prevention strategies about MRSA	Before, During, After Evaluation	Daily and weekly

Government officials (mayor, city council, other legislatures)	• Share information and prevention strategies about MRSA • Assist in adapting policies for infectious disease	Before And After Evaluation	Weekly
Professional Organizations (National Associations for Nurses and Athletic Trainers, American School Health Associations)	• Share information and prevention strategies about MRSA • Share MRSA-related resources • Consider implementation of widespread MRSA trainings for at risk settings	After Evaluation	Biweekly
Student body (athletes, students, student government)	• Share information and prevention strategies about MRSA • Work with athletics department to consider large role	Before, During, After Evaluation	Daily and weekly
Local Community and Recreation Centers	• Share information about MRSA • Track MRSA rates • Practice and promote prevention strategies	Before And After Evaluation	Daily
Hospital (Infection Control Teams, Labs, all Lexington Hospitals)	• Change Implementation • Share information and prevention strategies about MRSA • Prepare labs and system for rapid testing • Treat cases of MRSA	Before, During, After Evaluation	Daily and Weekly
Local Businesses (Hygiene and Laundry Supplies)	• Change Implementation • Prepare to support schools in prevention strategies	After Evaluation	Weekly
The community (family, guardians, parent-teacher association)	• Process and outcome evaluation • Change implementation • Share information and prevention strategies about MRSA	Before, During, After Evaluation	Daily and weekly

Insurance Companies and Organizations	• Change Implementation • Adapt policies • Share information and prevention strategies about MRSA	Before And After Evaluation	Monthly

In Summary

This evaluation aimed to assess the effectiveness of an online training program in reducing MRSA rates and was informed by the CDC's 6-stage program evaluation framework. Due to limitations encountered during the evaluation process, we were unable to definitively determine the program's impact on MRSA literacy and overall rates. However, the evaluation identified valuable insights, such as baseline knowledge and potential trends which may begin to inform future evaluations and understanding of impact. These insights will guide the development of a more robust evaluation plan to definitively assess the program's effectiveness in reducing the rates of MRSA in high school athletes.

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