BUILDING MPH CURRICULUM TO SUPPORT **INFECTION PREVENTION**

PROJECT **FIRST**LINE

The work completed by The Fairbanks School of Public Health at Indiana University Indianapolis was done so as a subcontract under NNPHI's work on Project Firstline which is supported by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $3,500,000 with 100 percent funded by CDC/HHS under CFDA 93.421 Centers for Disease Control and Prevention Cooperative Agreement 6 NU38OT000303-02-04.

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SECTION 1: Deliverables overview

Deliverable #1:

FSPH will update a proposed MPH curriculum using previous reports contracted by NNPHI. More content focusing on Infection Prevention and Control will be incorporated and the material will be adaptable to student populations in a variety of settings (rural, urban, and suburban).

The curriculum outline is included in this report.

Deliverable #2:

FSPH will create a roadmap for other MPH programs in schools of public health to follow to incorporate more content focusing on infection prevention and control, antibiotic resistance, and healthcare acquired infections into curriculum.

The roadmap is detailed in Section 2 of this report.

The FSPH team shared the work created in this project in three separate conference presentations:

- ASPPH (Association of Schools and Programs of Public Health)-Shandy Dearth, Thomas Duszynski, and DJ Shannon traveled to the ASPPH conference and presented along with Nicolas Llinas from NNPHI in a 20-minute session.
- NACCHO Emergency Preparedness Summit-Shandy Dearth traveled to the summit and presented on the project in a 45-minute session and answered several questions from participants. Feedback was positive and attendees seemed excited to have access to this new training. Audience suggestions included partnering with a pharmacist to further enhance the ICP training.
- NNPHI-Tom Duszysnki and DJ Shannon presented with Nicolas Llinas at the NNPHI conference in New Orleans in May.

Deliverable #3:

FSPH will create a Canvas course to use as the main training tool for the faculty. Any materials uploaded into Canvas can also be shared with NNPHI as individual items so the content can share be shared with other partners.

The modules are:

- This is infection control (a general overview of infection prevention and control)
- Infection prevention and control for environmental health courses
- Infection prevention and control for health policy courses
- Infection prevention and control in social and behavioral health courses
- An additional slide set based on health inequities in infection prevention and control was created. This slide set is not meant to be a stand-alone lecture, but rather, provides material that can be incorporated into all of the other slide sets as needed.

All slide sets were emailed to NNPHI staff.

Deliverable #4:

FSPH will create at least one video set in a health care setting (such as a residential room in a long-term care facility or a hospital patient room) where the viewer can learn to identify potential causes of concern/contamination.

Two videos were created. One is set in a hospital operating room and the second is in a patient room. Both are accessible at Video 1 Video 2

Deliverable #5:

FSPH will evaluate sections of the project as it progresses, including evaluating the process for training the faculty and evaluating the video(s) created. FSPH will produce a summary report at the end of the project.

Slides were emailed to a few FSPH faculty who were not known to have a background in infection prevention and control work. The FSPH team asked each faculty member if they had a background in infectious disease and none reported that they did. Reviewers were asked if they had a background in infection control to confirm that they did not, and were asked for overall comments and suggestions for improvement.

Recommendations included:

- Add statistics on the current Infection Control Preventionist workforce
- Add sociodemographics, geographic, and clinical statistics on who is most impacted by lack of infection prevention (and note if there is a group disproportionately influenced). The faculty member noted that this information could provide an additional aspect showing the importance of this field

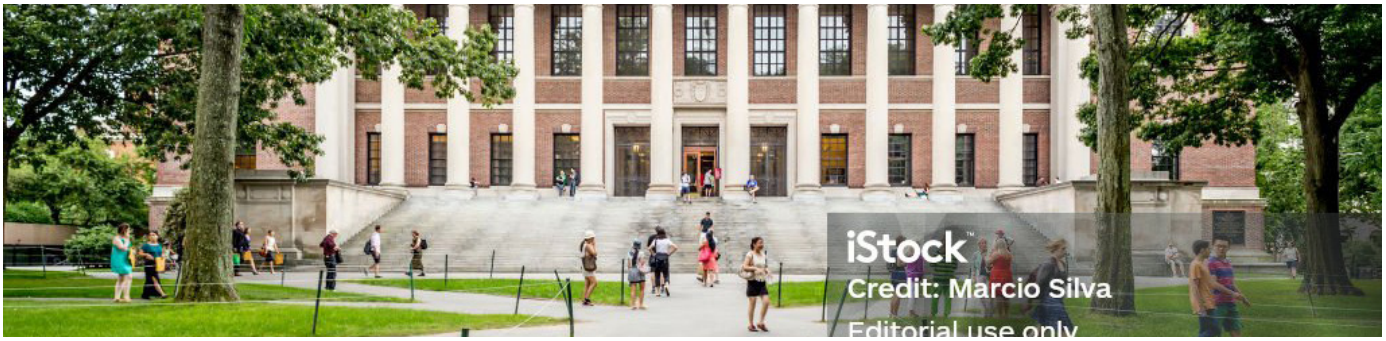
Deliverable #6:

Market analysis among MPH graduates.

Schools often conduct career and professional development surveys for their most recent graduates to capture professional placements. These surveys are voluntary and responses rates vary. A review of many of the top ranked public health schools showed that the schools do not always post the response rates for the surveys. For example, the 2022 survey conducted by the Harvard T.H Chan School of Public Health Graduate Employment Outcomes – Career and Professional Development (harvard.edu) noted that 45% of their graduates entered into a hospital or healthcare setting but response rates were not posted. The Bloomberg School of Public Health at Johns Hopkins posts a graduate employment outcomes dashboard at: Graduate Employment Outcomes Dashboard | Johns Hopkins | Bloomberg School of Public Health (jhu.edu) and reports that 23% of their alumni from 2018-2022 were employed in healthcare settings. The response rates for their surveys ranged from 32% to 45%. While some schools are posting static reports each year, some schools such as UNC have moved to using interactive dashboards (Collective Surveys (lightcast.io)).

The Rollins School of Public Health at Emory University also now publishes a dashboard and recent outcomes data show 15% of their graduates report they work in a healthcare setting, but this report appears to combine both undergraduates and graduates, so it is unclear how many of these graduates have an MPH. Many of the dashboards reviewed list the individual agency employing the graduate, but may not categorize the employer into settings such healthcare, government, academia, etc. and while individual placements may be very beneficial for potential incoming students to review, these are not as useful for the purpose of this analysis. One outcome of this project could be to suggest that CDC work with ASSPH to advocate for the National Association of Colleges and Employers to revise their standard protocols for the collection and dissemination of graduating student career outcomes information for advanced degrees to include a methodology to create categories of employer fields (Collective Surveys (lightcast.io)).

While the concept of moving MPH graduates is still fairly new and there is not broad research yet on the success of this approach, there is documentation regarding the willingness of hospitals to hire non-nurses for IP work. As noted in the foundation of this project, the traditional path to Infection Preventionist is that of a trained nurse accepting increasing roles and responsibilities. As the need for the role of IP increased during the COVID-19 pandemic and different settings were identified, new avenues for position attainment were necessary. Some have discussed the need for specialized programs in Infection Prevention (Crist et al., 2019) while others have discussed the possibilities of a route through a Master of Public Health (McGuire-Wolfe et al., 2023).



Additional Related Articles Identified:

Barker, C. A. (2023). Creation of an Infection Prevention Career Ladder Using the Infection Preventionist Competency Model. American Journal of Infection Control, 51(7, Supplement), S25. https://doi.org/10.1016/j.ajic.2023.04.037

Crist, K., Murphy, D., Wright, M.-O., Wallace, E., & Manning, M. L. (2019). The role of the infection preventionist in a transformed healthcare system: Meeting healthcare needs in the 21st century American Journal of Infection Control, 47(4), 352–357. https://doi.org/10.1016/j.ajic.2019.02.003

Gilmartin, H., Smathers, S., & Reese, S. M. (2021). Infection preventionist retention and professional development strategies: Insights from a national survey. American Journal of Infection Control, 49(7),960–962. https://doi.org/10.1016/j.ajic.2021.04.083

Kang, J. A., Stone, P. W., Glance, L. G., & Dick, A. W. (2024). The association of nursing home infection preventionists' training and credentialing with resident COVID 19 deaths. Journal of the American Geriatrics Society, 72(4), 1070–1078. https://doi.org/10.1111/jgs.18760

Reese, S. M., Gilmartin, H., & Smathers, S. (2021). Challenges and opportunities in recruiting, hiring and training infection preventionists across facility settings. American Journal of Infection Control, 49(8), 973–977. https://doi.org/10.1016/j.ajic.2021.05.001

It is worth noting that the COVID pandemic also highlighted the need for additional trained personnel to be placed in long term settings as well. The population of Americans 65 and older is projected to increase by 47%, resulting in an increase of 24 million people (about the population of Texas)(Bureau, n.d.) While it is difficult to estimate the amount of long-term care that will be needed by the growing population, currently, 2 in 3 people will need long term care at some point with 20 percent will need it for longer than 5 years. The result of an aging population is a growing need for more long-term care.

Related Articles Identified:

Bureau, U. C. (n.d.). 2023 National Population Projections Tables: Main Series. Census.Gov. Retrieved April 24, 2024, from https://www.census.gov/data/tables/2023/demo/popproj/2023summary-tables.html

Fact Sheet: Aging in the United States. (n.d.). PRB. Retrieved April 24, 2024, from https://www.prb.org/resources/fact-sheet-aging-in-the-united-states/

Feder, J., Komisar, H. L., & Niefeld, M. (2000). Long-Term Care In The United States: An Overview. Health Affairs, 19(3), 40–56. https://doi.org/10.1377/hlthaff.19.3.40

Long-term Care Facilities | CDC. (2023, August 31). https://www.cdc.gov/longtermcare/index.html

The state of the residential long-term care industry: A comprehensive look at employment levels, demographics, wages, benefits, and poverty rates of workers in the industry. (n.d.). Economic Policy Institute. Retrieved April 24, 2024, from https://www.epi.org/publication/residential-long-term-care-workers/

Summary of LTC settings in Indiana

Indiana is not immune to the expected boom in long term care needs. Estimates from the Indiana Business Research Center estimate an increase from 1,114,466 Hoosiers over the age of 65 in 2020 to 1,518, 607 in 2050. That is an increase of 400,000 people, more than the population of the second biggest city in the state, Fort Wayne. Currently, the Indiana Care Planning Council lists 511 active nursing home facilities. While there has been consistent growth in the long-term care industry, more growth will be needed in coming years to keep up with changes in population.

Related Articles Identified:

Rogers, C. O. (n.d.). Indiana's nursing home industry. Retrieved April 24, 2024, from https://www.ibrc.indiana.edu/ibr/2022/summer/article2.html

There is also documentation available detailing the students' interest in working in the IPC field.

Related Articles Identified:

Amavasi, B., & Zimmerman, P.-A. (2024). Infection prevention and control continuous education and training in pre-registration nursing programs. Nurse Education Today, 133, 106051. https://doiorg/10.1016/j.nedt.2023.106051

Jaślan, D., Rosiński, J., Siewierska, M., Szczypta, A., Wałaszek, M., Wójkowska-Mach, J., Gniadek, A., Majewska, R., & Różańska, A. (2020). Interest in Working as an Infection Prevention and Control Nurseand Perception of This Position by Nursing Students-Results of a Pilot Study. International Journal of Environmental Research and Public Health, 17(21), 7943. https://doi.org/10.3390/ijerph17217943

Jeffres, M. N., Biehle, L. R., & MacDougall, C. (2018). Comprehensive Assessment of Didactic Curriculum and Career Interest in Infectious Diseases Among Graduating United States Pharmacy Students. Open Forum Infectious Diseases, 5(11), ofy284. https://doi.org/10.1093/ofid/ofy284

SECTION 2: Roadmap of how Schools of Public Health can incorporate infection prevention and training material into their MPH programs

Schools of Public Health who are interested in adding or expanding their ability to offer training in infection prevention and control in their Master of Public Health programs should consider the following steps to successfully manage these programs.

1

Schools must first earn buy-in from their own school leadership. As colleges and universities in the United States struggle with declining student enrollment in the "enrollment cliff" (https://www.chronicle.com/article/colleges-were-already-bracing-for-an-enrollment-cliff-now-there-might-be-a-second-one) there is increased pressure to highlight how college degrees transfer into employable skills and successful job placement. There is already strong documentation of the labor workforce shortage in the areas of infection prevention and control. The market analysis information and related articles collected for this final report can be used as support for leadership as they determine to move forward with incorporating IPC work into their MPH programs. Those promoting the integration of IPC material into the existing MPH coursework should also work closely with those school staff and faculty tasked with maintaining accreditation documentation so the new material is adequately reported in upcoming accreditation submissions.

2

Schools should consider the landscape of potential employers for these graduates. Schools with a close proximity to academic health centers are in a prime position to expand these IPC trainings. A review of the graduate records review conducted by FSPH, showed that the vast majority of MPH graduates are employed in public health departments, hospitals, places of higher education, and research facilities upon completion of their degrees. This means that schools could also consider reaching out to alumni currently employed in hospital settings to inquire about connecting with the infection preventionists at the facilities to gauge their interests or possible concerns in hiring a MPH trained IP in those roles. These sites could also be potential training/internship sites for students in IP programs.

3

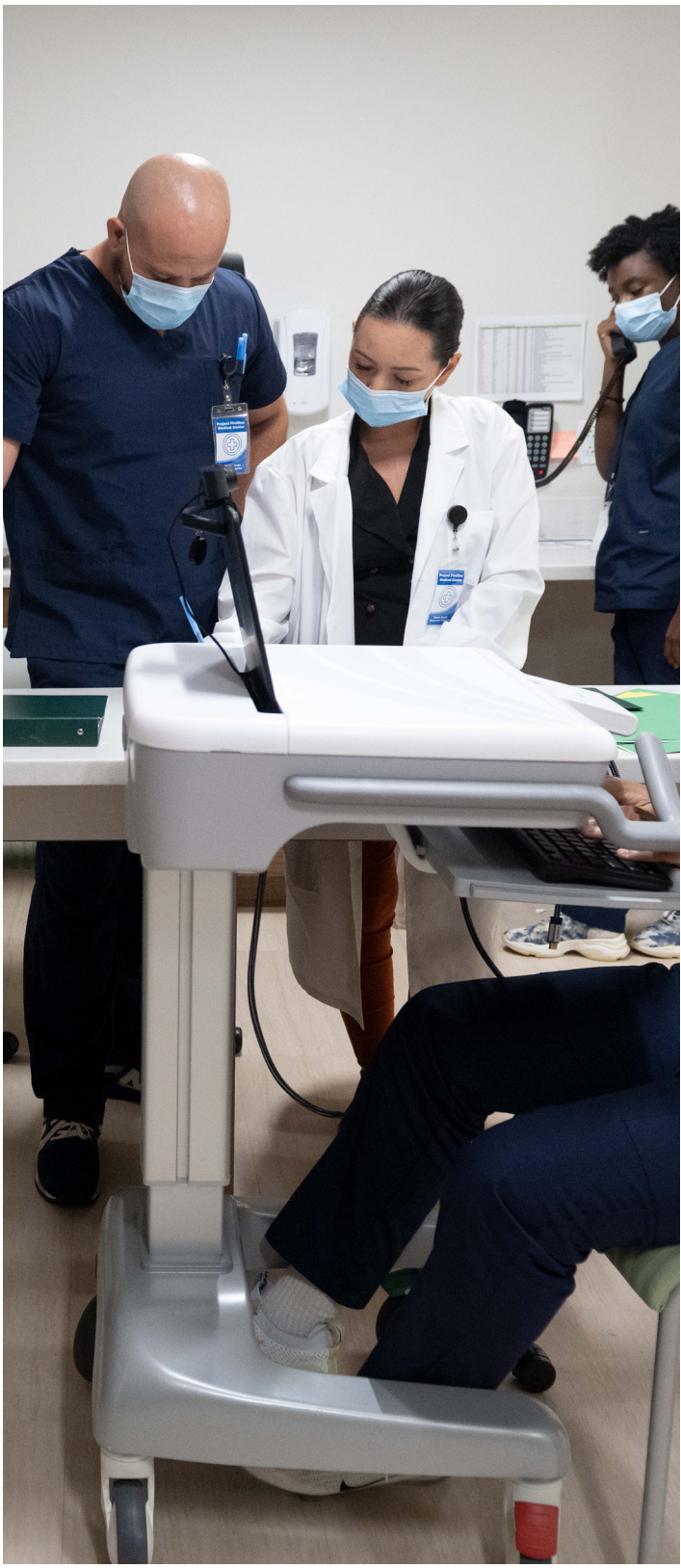
The school must build a good working relationship with a local hospital, preferably one that is a part of a larger network. A successful pilot in one location can be easier to replicate in sister agencies.

4

Schools should partner with nearby hospitals to provide hands on internships within the health care settings. **The syllabus for the first semester of hands-on training available through a partnership at IU FSPH and IU Health hospitals in Indianapolis is included below.** From the experience at IU, one hospital staff person can reasonably accommodate five students in one setting per semester. Please note that hospitals will requires additional requirements for interns who are placed in clinical settings. The school should determine how these requirements will be covered financially (tuberculosis test, any outstanding immunizations, etc.). While some nursing and medical schools currently add these expected charges to students' semester fees, there is no set standard for the practice. Expecting the students to pay these expenses out of pocket could be seen as a barrier to attracting students to the field and could inadvertently lead to disparities among the staff who eventually fill these IPC roles in healthcare settings.

5

Schools and programs in public health should also consider partnering with nursing schools to recruit new graduates and alumni into the MPH program where they could obtain this additional focused training in infection prevention and control.



SECTION 2.1: Course Syllabus for an IPC Internship

Course syllabus for the IPC internship
RICHARD M. FAIRBANKS SCHOOL OF PUBLIC HEALTH
Spring, 2024

COURSE TITLE Introduction to Infection Prevention

COURSE NUMBER: PBHL E670

CREDIT HOURS: 3.0 credits

LOCATION:

DATE:

FACULTY:

COURSE DESCRIPTION:

This course is developed to introduce students to the field of healthcare epidemiology and infection prevention. Infection prevention aims to improve patient safety by preventing and controlling healthcare-associated infections and the transmission of infectious agents. Course participants will gain skills utilized by healthcare epidemiologists and infection preventionists. Covered topics will include identification of infectious disease processes, surveillance and epidemiologic investigations, preventing/controlling the transmission of infectious agents, occupational health, management and communication, education, and disinfection and sterilization techniques.

LEARNING OBJECTIVES:

Addressed MPH competencies:

- Apply epidemiological methods to the breadth of settings and situations in public health practice
- Communicate audience-appropriate public health content, both in writing and through oral presentation
- Perform effectively on interprofessional teams
- Analyze quantitative and qualitative data using biostatistics, informatics, computer-based
- Programming and software, as appropriate
- Assess population needs, assets and capacities that affect communities' health
- Select methods to evaluate public health programs

Addressed a-IPC competencies domains:

- Preventing/Controlling the Transmission of Infectious Agents
- Processes to Identify Infectious Diseases
- Surveillance and Epidemiologic Investigation
- Management and Communication of the Infection Prevention Program
- Environment of Care

REQUIRED OR SUGGESTED TEXT AND/OR READINGS

Assigned reading materials will be provided.

Required: Assigned readings as described in the syllabus, posted in Canvas, and provided as needed to guide seminar discussion.

COURSE GRADING

Assignment	Points	Percentage
Reading checks/seminar discussions	200	20%
Assignments	300	30%
Reflections	500	50%
Total	**1000**	**100%**

EVALUATION AND GRADING SCALE (1000 points)

A+	970 and +	B+	870-899	C+	770-799	D+	670-699	F	< 599
A	940-969	B	840-869	C	740-769	D	640-669		
A-	900-939	B-	800-839	C-	700-739	D-	600-639		

READING CHECKS/SEMINAR DISCUSSIONS

Readings will be assigned throughout the semester. These readings are vital to the students' learning experience and reading checks will take place throughout the semester to ensure reading and understanding.

ASSIGNMENTS

Partnering to Heal assignment

Students will be complete the simulation-based infection prevention training and then write a review of their experience. See Canvas assignment for details.

Antimicrobial and Diagnostic Stewardship assignment

Students will be provided patient case and review for an infection, including identifying possible gaps and opportunities for improvement. Students will present their case to the class for a clinical review. See Canvas assignment for details.

Infection Prevention Bundles assignment

Students will select a specific infection prevention bundle as discussed in seminars and will be expected to present on the different bundle elements to the class. See Canvas assignment for details.

REFLECTIONS

Throughout the semester, there will be five (5) written reflections based on your experience during a shadowing opportunity. You will be prompted to discuss what you learned, but more importantly what questions you had. You will then need to research the answer to your question(s) and provide a written description to the question you identified. This will then be part of the discussion during seminars.

EXAMS

There will be no formal examinations in this class.

ATTENDANCE

This is class is designed for hands-on learning in an immersive clinical environment. As such, your attendance is mandatory and of utmost importance. Students are expected to be present and actively engaged throughout the entire experience. Assignment deadlines are final and no exceptions should be granted. No exceptions unless scheduled through Adaptive Educational Services (AES) based on student need. There are no makeups and no early or late assignments, etc. given to accommodate early or late travel plans, plan accordingly.

CLASS SCHEDULE

Topics and schedule may be modified by the instructor as needed

Week	Topic	Task/Activity	Reading	Assignment	MPH Competency	a-IPC Competency
1 Onboarding	IU Health onboarding. Introductions. Orientation requirements			Watch IPs Save Lives video.		
2 Infection Prevention Foundations	Introduction/ Syllabus and course summary. APIC Competency Model, Role and Scope of the Infection Preventionist, Professional and Practice Standards, risk assessment, Annual Plan, IPC Committee, Regulatory standards	Pre assessment	ATO: Infection prevention and control programs ATO: Competency and certification of IPs	Complete Partnering to Heal activity	Assess population needs, assets and capacities that affect communities' health	Surveillance and Epidemiologic Investigation
	Hand hygiene, standard and transmission-based precautions, PPE, aseptic technique, chain of infection.	Hospital tour	ATO: Basic principles of IPC Practice ATO: Hand Hygiene ATO: Standard Precautions ATO: Isolation Precautions ATO: Aseptic Technique Optional: Guideline for Hand Hygiene in Healthcare Settings		Apply epidemiological methods to the breadth of settings and situations in public health practice Perform effectively on interprofessional teams	Preventing/ Controlling the Transmission of Infectious Agents

Week	Topic	Task/Activity	Reading	Assignment	MPH Competency	a-IPC Competency
3 Introduction to Infection Prevention and Control	Introduction to daily operations, IP Department structure and function	NBS reporting Isolation review (VigiLanz and short terms)			Apply epidemiological methods to the breadth of settings and situations in public health practice	Surveillance and Epidemiologic Investigation
	Introduction to the clinical environment	Hand hygiene and isolation audits Attend multidisciplinary huddle			Perform effectively on interprofessional teams	Preventing/ Controlling the Transmission of Infectious Agents
4 Laboratory Foundations and Improvement processes	Introduction to laboratory science and interpreting labs	Lab tour Review blood culture contamination	ATO: Microbiology Basics ATO: Laboratory Testing and Diagnostics	Reflection 1	Perform effectively on interprofessional teams	Processes to Identify Infectious Diseases Surveillance and Epidemiologic Investigation
	Implementation science and process improvement	RCA exercise			Communicate audience-appropriate public health content, both in writing and through oral presentation Select methods to evaluate public health programs	Management and Communication of the Infection Prevention Program

Week	Topic	Task/Activity	Reading	Assignment	MPH Competency	a-IPC Competency
5 Environment of Care	EVS, Linens, Waste Management	EOC rounds	ATO: Environmental Services	Reflection 2	Perform effectively on interprofessional teams	Environment of Care
	Facilities, HVAC, Water quality, Construction	Construction rounds	ATO: Maintenance and Engineering ATO: Heating, Ventilation, and Air Conditioning ATO: Water Systems Issues ATO: Construction and Renovation			Environment of Care
6 Prevention and Control of HAIs	Antimicrobial resistance and stewardship	Shadow Infectious Disease team Review antibiogram	ATO: Antimicrobials and Resistance		Apply epidemiological methods to the breadth of settings and situations in public health practice Perform effectively on interprofessional teams	Processes to Identify Infectious Diseases Preventing/ Controlling the Transmission of Infectious Agents
	C. difficile infection: disease process and diagnostic stewardship	Begin attending HAI Review Review C. difficile ordering algorithm	ATO: C difficile infection and Pseudomem-branous colitis	Antimicrobial and Diagnostic Stewardship Assignment	Apply epidemiological methods to the breadth of settings and situations in public health practice Communicate audience-appropriate public health content, both in writing and through oral presentation	Processes to Identify Infectious Diseases

Week	Topic	Task/Activity	Reading	Assignment	MPH Competency	a-IPC Competency
7 Prevention and Control of HAIs	Urinary tract infection: disease process and device/diagnostic stewardship	Bundle audits Review urine culture ordering algorithm	ATO: Urinary Tract Infections Optional: APIC Guide to Preventing CAUTI	Reflection 3	Apply epidemiological methods to the breadth of settings and situations in public health practice Communicate audience-appropriate public health content, both in writing and through oral presentation	Processes to Identify Infectious Diseases
	Bloodstream infection: disease process and device/diagnostic stewardship		ATO: Vascular Access Device-Associated Infections Optional: APIC Guide to Preventing CLABSI SHEA Strategies to Prevent CLABSI		Apply epidemiological methods to the breadth of settings and situations in public health practice Communicate audience-appropriate public health content, both in writing and through oral presentation	Processes to Identify Infectious Diseases
8 Prevention and Control of HAIs	nvHAP and VAP: disease process and device/diagnostic stewardship		ATO: Pneumonia Optional: SHEA Strategies to Prevent VAP	Bundles Assignment	Apply epidemiological methods to the breadth of settings and situations in public health practice Communicate audience-appropriate public health content, both in writing and through oral presentation	Processes to Identify Infectious Diseases
	Surgical site infection		ATO: Surgical Site Infection Optional: SHEA Strategies to Prevent SSI		Communicate audience-appropriate public health content, both in writing and through oral presentation	Processes to Identify Infectious Diseases

Week	Topic	Task/Activity	Reading	Assignment	MPH Competency	a-IPC Competency
9 Infection Prevention in Procedural Settings	Disinfection and sterilization. Spaulding's Classification. IFUs. EPA Lists	SPD tour/audits Review IFUs	ATO: Sterile Processing	Reflection 4	Perform effectively on interprofessional teams	Preventing/ Controlling the Transmission of Infectious Agents Cleaning, Disinfection, Sterilization of Medical Devices and Equipment
	Operating Room, Endoscopy, Bronchoscopy, MIPS	OR observation/ audits	ATO: Surgical Services Optional: APIC IP Guide to the OR		Perform effectively on interprofessional teams	Cleaning, Disinfection, Sterilization of Medical Devices and Equipment
10 Spring Break	NHSN Surveillance					

Week	Topic	Task/Activity	Reading	Assignment	MPH Competency	a-IPC Competency
11 Surveillance and Data Analytics	NHSN Surveillance				Apply epidemiological methods to the breadth of settings and situations in public health practice Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate	Surveillance and Epidemiologic Investigation
	Applied data analysis and data visualization				Apply epidemiological methods to the breadth of settings and situations in public health practice Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate Interpret results of data analysis for public health research, policy or practice	Surveillance and Epidemiologic Investigation
12 Infectious diseases	Respiratory infections and Tuberculosis				Apply epidemio-logical methods to the breadth of settings and situations in public health practice	Preventing/ Controlling the Transmission of Infectious Agents
	Vaccine Preventable Diseases and Immunizations		ATO: Immunization of Healthcare Personnel		Apply epidemio-logical methods to the breadth of settings and situations in public health practice	Preventing/ Controlling the Transmission of Infectious Agents Employee/ Occupational Health

Week	Topic	Task/Activity	Reading	Assignment	MPH Competency	a-IPC Competency
13 Infectious diseases	Enteric diseases		ATO: Foodborne Illness		Apply epidemiological methods to the breadth of settings and situations in public health practice	Preventing/ Controlling the Transmission of Infectious Agents
	Food and Nutrition Services				Perform effectively on interprofessional teams	Preventing/ Controlling the Transmission of Infectious Agents Environment of Care
14 Outbreak response and emerging infectious diseases	Outbreak response. Exposure investigation.		Incident Command System – 100 online FEMA course	Reflection 5	Apply epidemiological methods to the breadth of settings and situations in public health practice Perform effectively on interprofessional teams	Surveillance and Epidemiologic Investigation Employee/ Occupational Health
	Emerging infectious diseases	Special Pathogens Unit exercise			Perform effectively on interprofessional teams	Preventing/ Controlling the Transmission of Infectious Agents
15 Continuum of Care	LTC, Dialysis, Ambulatory, Behavioral Health, Pediatrics/NICU					
	Public Health: IDOH					
16 Next steps	Course wrap up/ transition to practicum	Mid-assessment				

SECTION 3: VR trainings and studies of using VR for training purposes

Trainings (Virtual Reality samples and training videos):

The following is a collection of VR trainings that could be used to showcase the possibilities of such trainings.

- https://oshce.uw.edu/resources/virtual-reality-training-tools/forest-worker-training Occupational Safety and Health Continuing Education. VR/AR forest worker training. Can download the software needed here. Includes chainsaw safety, forest worker PPE, installation instructions, activity sheets, teaching guide, and more.
- https://www.coursera.org courses?query=virtual%20reality&topic=Health This site offers several free trainings. Each course offers different skills and experiences. While these are not exactly public health courses, they can offer a bit of framework and inspiration.
- https://www.3m.com/3M/en_US/worker-health-safety-us/3m-ppe-training/virtual-reality/ This website focuses on worker health and safety. Has applications such as fall protection, harness inspection, and working at high altitudes. You can request trials with these trainings.
- https://www.youtube.com/watch?v=EuewiZESfCM INCORA infection prevention and control training VR and LMS video.
- https://www.youtube.com/watch?v=owaJJ34BcEc ViRTRUE playthrough. Hand hygiene simulator that offers realistic and interactive training for infection prevention.
- https://www.youtube.com/watch?v=4lBd4QIhI98 Training demo by Shift specifically for infection prevention training. Shows safety regulation walkthroughs, PPE regulations, contamination mapping, taking radical pulse, and doffing PPE.
- https://www.youtube.com/watch?v=GVPv5wToP4QActive Shooter survival immersive training. This training can provide safe and realistic training in the case of an active shooter.
- https://www.youtube.com/watch?v=Ufo6cW9xoWw Virtual Speech has created a VR media training. Information shared can come in handy for health department training and how to handle journalists and other forms of media.

Studies that examine the usefulness of VR as a training tool:

- https://francis-press.com/uploads/papers/y7vS2jwU42pCTXaTh0ILjPgzLAyaMmJVKdv0zsOn.pdf This article aimed to study prevention and intervention methods for public health emergencies in universities. Mentions different algorithms used. Discussed emergency evacuation simulation and psychological crisis intervention.
- https://games.jmir.org/2021/4/e29956/XML?__hstc=28048957.d754b281c25b9352591a8b7a9b252a3f.1714961074596.1714961074596.1714961074596.1&__hssc=28048957.1.1714961074598&__hsfp=4136036889 This group designed a virtual reality interactive training system to help improve public health emergency preparedness. The training specifically focuses on effectively responding to and recovering from major emerging infectious diseases. Includes response to emergency, skills, legal compliance, economics, secondary disasters (and how to avoid them), and how to address physical/mental health of responders.
- https://bmjopen.bmj.com/content/bmjopen/11/9/e048611.full.pdf Study on VR emergency response training for nurses. Showed that a combination of VR and technical skills training can improve response capacity to an emergency. This resource is useful for training details and can potentially apply to public health professionals.
- https://www.jmir.org/2019/1/e12959/ A review of VR technology and its effectiveness in health education. Showed that VR improves knowledge, skills, and outcomes of health professionals compared to traditional education.

Other Useful Information:

- https://link.springer.com/article/10.1007/s11948-017-9979-y Discusses VR risks. Poor mental health, physical health neglect, privacy and manipulation, and moral and social risk were discussed. Also talked about public policy recommendations, requirements, warnings, and more.
- https://publichealth.gmu.edu/academics/virtual-reality-and-simulation-lab George Mason University discusses their VR simulation lab as well as the VR equipment used. Public health highlights include: scenarios for pressing public health issues, including opioid use disorder, behavioral health, and memory care.
- https://debeaumont.org/virtual-reality/ De Beaumont Foundation creates VR for public health policy and the impact of community health. The goal is to improve policymakers' knowledge on SDOH. Includes outreach and conversations with public health professionals, academics, and students. Can choose the environment settings to demonstrate the impact of community health.
- https://transfrinc.com/products/virtual-healthcare-clinic/ Transfr is a site that offers VR training simulations in the health sciences industry. The training modules of this course include safety practices, infection control, prevention, data collection, and activities of daily living. You can schedule a demo or informational call with them if you are interested.
- https://www.youtube.com/watch?v=oTFBHQqG8vo This resource discusses the cause of VR motion sickness, who is susceptible, treatments, and preventative measures.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