Semester: II

Core Course

7. Course Code & Title: MPC 52 03 & Infectious Disease Epidemiology

Credits: 2

Learning Objectives

At the end of the course the student will be able to

- 1. Understand the basic concepts in infectious disease epidemiology and apply them.
- 2. Appreciate vaccination as a strategy for disease prevention and control and understand the concepts of vaccine efficacy and effectiveness.
- 3. Discuss the ecology of emergence, progression and remission of infectious diseases in the community.
- 4. List the various infectious disease control modalities including investigation of an outbreak.
- 5. Develop basic deterministic models for infectious disease outbreaks in a population.
- 6. Develop an aptitude to alert to emergence of and developments in infectious disease epidemiology.

Sl.No	Module	Торіс	Readings
1	In tr od uc	History of Infectious Disease Epidemiology	Kramer et al, (2010)
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		Global Burden of Infectious Diseases	
		Principles of Infectious Disease Epidemiology	
		Key Terminologies used in IDE	
		Natural History of Disease	Kramer et al, (2010)
		Spectrum of Disease	
		Transmission of Disease	Kramer et al, (2010)
		Chain of TransmissionModes of Transmission	
		Epidemiological Triad in the context of Infectious diseases	Kramer et al, (2010)
		Classification of Infectious Diseases	
		Type of AgentType of DiseaseType of Transmission	Park (2011)
		Notifiable Diseases	
	an	Basic concepts of Immunity	Kramer et al, (2010)
2	Prevention and Management of Infectious Diseases	Active immunityPassive immunityHeard Immunity	
	vention anent of In	Vaccination Basic concepts	http://www.ph.ucla.edu/EPI/41508/415cmat/lect14_41508.pdf
	Pre [.] Managen	Development of VaccinationVaccine trailsCritical Vaccination coverage	Zodpey (1998), Wierzba et al (2015), Powell & Begue (2019)

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		- Vaccine effectiveness	
		- Community effectiveness of vaccines	
		Disease outbreaks	
		TD 6.11 .1 .1	D 1 (2011)
		- Types of disease outbreak	Park (2011)
		- Outbreak investigation	
		- Post outbreak interventions	
		Types of mathematical models used in mathematical modelling of	Kramer et al, (2010)
	ses	ID	
	sea		
	Dis	- Statistical Models	
	sno	- Deterministic Models	
	tio	- Stochastic Models	
	ıfec		Kramer et al, (2010)
	f In		
3	0 g	Deterministic Models	
	llin		
	ode]	- Basic SIR Models	
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	la	Demonics in CID models (influence of Dinth Dooth Microtics etc.)	Washington et al. (2010)
	Mathematical Modelling of Infectious Diseases	Dynamics in SIR models (influence of Birth, Death, Migration etc.)	Kramer et al, (2010)
	em	Basic Reproductive Number (R ₀)	Kramer et al, (2010)
	ath	Busic reproductive runnost (10)	Trumer et al, (2010)
	M	Importance of R ₀ in predicting Disease Dynamics	
	sn	Emerging and Remerging Diseases	Kramer et al, (2010)
	ary tion gy		
4	Contemporary eas in Infectiou Disease Epidemiology		
4	ntempora in Infect Disease idemiolo	Economic Evaluation of Infectious Disease Interventions	Kramer et al, (2010)
	nte s in Di	Economic Evaluation of infectious Disease interventions	Krainer et ai, (2010)
	Contemporary Ideas in Infectious Disease Epidemiology	Globalization and Infectious Diseases	Kramer et al, (2010)
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		Climate Change and Infectious Diseases	Kramer et al, (2010)
		Social Risk factors for Infectious Diseases	Kramer et al, (2010)
		Applying GIS in Infectious Disease Mapping	Kramer et al, (2010)

Readings:

- 1. School of Public Health, University of California (undated) Measuring Effectiveness of Immunization Programs. Available at http://www.ph.ucla.edu/EPI/41508/415cmat/lect14 41508.pdf
- 2. Zodpey, S. P., Shrikhande, S. N., Maldhure, B. R., Vasudeo, N. D., & Kulkarni, S. W. (1998). Effectiveness of Bacillus Calmette Guerin (BCG) vaccination in the prevention of childhood pulmonary tuberculosis: a case control study in Nagpur, India. *The Southeast Asian journal of tropical medicine and public health*, 29(2), 285-288.
- 3. Wierzba, T. F., Kar, S. K., Mogasale, V. V., Kerketta, A. S., You, Y. A., Baral, P., ... & Bhattachan, A. (2015). Effectiveness of an oral cholera vaccine campaign to prevent clinically-significant cholera in Odisha State, India. *Vaccine*, *33*(21), 2463-2469.
- 4. Powell, L. N., & Bégué, R. E. (2019). Influenza Vaccine Effectiveness Among Children for the 2017–2018 Season. *Journal of the Pediatric Infectious Diseases Society*.
- 5. Krämer, A., Kretzschmar, M., & Krickeberg, K. (Eds.). (2010). *Modern infectious disease epidemiology: Concepts, methods, mathematical models, and public health*. Springer Science & Business Media.
- 6. Park, K. (2011). Park's textbook of preventive and social medicine. Jabalpur. Banarasidas Bhanot, 463.