**Model Seven Assignment**

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**Postgraduate Diploma in Public Health**

**Course code: PGD007**

1. **Give the definition of public health and trace its history?**

Public health can be defined as the art and science of preventing disease, prolonging life and promoting physical and mental health, sanitation, personal hygiene, control of infectious diseases and organization of health services.

The historical development of public health, which began in ancient times, emphasizes how various public health concepts have evolved. Historical public health measures included; quarantine of leprosy victims in the middle ages and efforts to improve sanitation following the 14th century plague epidemics. Population increase in Europe brought with them increased awareness of infant deaths and the proliferation of hospitals. Most of the world’s ancient people practiced cleanliness and personal hygiene, often for religious reasons, including, apparently, a wish to be pure in the eyes of their gods. The bible, for example, has many adjurations and prohibitions about clean and unclean living. Religion, law and custom were inextricably interwoven. For thousands of years societies looked upon epidemics as divine judgments on the wickedness of humankind. The idea that pestilence is due to natural causes, such as climate and physical environment, however, gradually developed. This great advance though took place in Greece during the 5th and 4th BC and represented the first attempt at a rational, scientific theory of disease causation. An association between Malaria and swamps, for example was established very early (503-403 BC), even though the reasons for the association were obscure. In the book *Airs, Waters, and plaque*, though to have been written by Greek physician Hippocrates in the 5th or 4th century BC, the first systematic attempts were made to set forth a causal relationship between human diseases and the environment. Until the new sciences of bacteriology and immunology emerged well in the 19th century, this book provided a theoretical basis for the comprehension of endemic disease (persisting in a particular locality) and epidemic diseases (affecting number of people within a relatively short period). In the modern era, James Lind’s clinical trial of various dietary treatments of British Sailors with Scurvy in 1756 and Edward Jenner’s 1796 discovery that cowpox vaccination prevents smallpox have modern-day applications as the science and practices of nutrition and immunization are crucial influence on health among the population of developing and developed countries. Public health evolved through trail and error and expanding scientific medical knowledge, at times controversial, often stimulated by war and natural disasters. The need for organized health protection grew as part of the development of community life, and in particular, Urbanization and social reforms. Religious and societal beliefs influenced approaches to explaining and attempting to control communicable disease by sanitation, Town planning and provision of medical care. Modern society in high, medium and low-income countries still faces the ancient scourges of communicable diseases, but also the modern pandemics of the cardiovascular disease, cancers, mental illness and trauma. The emergence of acquired immunodeficiency syndrome (AIDS) and severe acute respiratory syndrome (SARS), avian influenza, and drug-resistant microorganisms forces human to seek new ways of preventing their potentially serious consequence to society. Threats to health world facing severe climate and ecological change pose harsh and potentially devastating consequence for society. (Theodore H. Tulchinsky MD, MPH, Elena A. Varavikova MD, MPH, PhD, in The New Public Health (Third Edition), 2014)

1. **How has technology improved communication of public health communication?**

Supporting shared decision-making between patients and providers. Providing personalized self-management tools and resources.

Building social support networks to deliver accurate, accessible, and actionable health information that is targeted or tailored.

Facilitating the meaningful use of health IT and the exchange of health information among health care and public health professionals. Enabling quick and informed responses to health risks and public health emergencies.

Increasing health literacy skills to provide new opportunities to connect with culturally diverse and hard-to-reach populations.

Providing sound principles in the design of programs and interventions that result in healthier behaviors.

Increasing Internet and mobile access, Improve health care quality and safety. Increase the efficiency of health care and public health service delivery.

Improve the public health information infrastructure to support care in the community and at home.

Building health skills and knowledge to facilitate clinical and consumer decision-making. Computer technology has dramatically widened the skills and knowledges of health providers with easy access to new techniques through internets.

1. **Using an example of communication campaign in your Organization, explain how it was done and explain how effective or infective it was?**

World relief South Sudan is the South Sudanese branch of world relief, an international non-governmental organization dedicated to partnering with the local church to see the vulnerable people transformed economically, socially and spiritually. Since 1998, world relief has been working with the local church to address humanitarian and development needs related to health, nutrition, food security and livelihoods (FSL), education, WASH water, sanitation & hygiene), protection, disaster risk reduction (DRR) and church empowerment. Malnutrition, especially under-nutrition, continues to be one of the major health problems in the Republic of South Sudan. Nearly a third (31%) of the children under five years of age are chronically malnourished (stunted) and 28% are underweight. The prevalence of acute malnutrition is equally high (Global Acute Malnutrition (GAM) at 23% and Severe Acute Malnutrition (SAM) at 10%); with health facilities reporting it among the top ten health conditions seen in outpatient departments (OPD). These unacceptable indicators are sustained by food insecurity arising from poor food production capacity of families, poor health and nutrition practices and habits, insecurity and vagaries of nature. The Ministry of Health is aware of the multi-sectoral nature of the problem of malnutrition and is ready to engage with the other partner ministries of government and development partners towards tackling the problem. In its implementation of nutrition in New Fangak, world relief adopted a Ministry of health strategic to address the nutritional needs of the children under 5 years, lactating and pregnant women through community mobilization and awareness on exclusive breastfeeding and weaning by the help of community volunteers that penetrate the community and hard-to-reaches areas of New Fangak. The strategic is being implemented by community nutrition volunteers and lead mothers.

MYCIN Strategic and Massaging, MYCIN stands for mother, young child and infant nutrition. This is a community component of nutrition services rendered to improve the nutritional status of under 5 years through creating community awareness targeting young lactating and pregnant women. The volunteers pass the massages to the people at homes or in socially gathering and the massages focuses on exclusive breastfeeding of the babies for six months, frequent breastfeeding of the babies, balanced diet for the young infant and early seeking for medical attention. These massages are usually passed in varies forms, individual or in groups to address the needs of the mothers especially mothers whose children are several malnourished are counselled individually and are then referred to the nutrition centers. The community volunteers use posters, charts and dramas to explain and passed the massages to the community members. MYCIN massaging dramatically improved the nutritional status of the children as more children were able to access and received the services at the nutrition centers subsequentially reduction in the malnutrition rate among the children in New Fangak, as more mothers know how to breastfeed and prepared well balanced diet for the young infant. However, the strategic has faced and still facing a lot of setback as the massages need to be translated from English to Nuer Language in which the translation is not perfectly done with some communication gaps. Most of the volunteers have not attained basic education to effectively translated the massages to the community members. (Community management of acute malnutrition South Sudan guideline CMAM)

1. **What is patient centered care communication and how it has improved service delivery for public health professionals?**

Communication is the way in which humans make sense of the world around them. Communication takes place as an interactive two-way process or interaction, involving two or more people and can occur by nonverbal, verbal, face-to-face or nonface-to-face methods. Effective communication is described to occur when the sender of a massage sends their massage in the way that convey the intent of their massage and then is understood by the receiver of the massage. communication is a significant factor in patient satisfaction and complaint about care. Therefore, patient-centered care communication is defined as communication that is respectful of and responsive to health care user’s needs, beliefs, valves and preferences. This means the communication by health professionals and organizations that draws out patient’s perspective and put them into context, recognizes and respect patient’s valves and beliefs, and encourages patients to take part in their own care and decision-making.

**Improve the patient experience.** The duration of the visit is not nearly as importance as the quality of time spent face-to-face with the physician. Effective communication and engagement produce higher patient satisfaction and clinical experiences scores.

**Increase patient engagement.** Patients do not understand, remember or comprehend most physician instructions leading to poor compliance and adherence. Utilization of highly visual infographic to assist learning and reviewing the recorded encounter improves increases patient caregiver understanding.

**Improve patient adherence.** Patient beliefs about medication were more powerful predictors of adherence. By engaging patients in the treatment discussion, patients can be more empowered to comply with the instructions.

**Few requests for expensive tests.** Strongly physician-patient relationships characterized by effective patient- centered communication skills report higher levels of patients trust in the doctor and lower levels of patients request for expensive diagnostic tests. Effective communication has shown to improve patient perception of trusting their healthcare providers.

**Fewer ER visits and hospital readmission.** Patients in strong patient-centered physician relationships are more likely to engage in the kinds of self-care management behaviors which preclude ER visits and readmissions.

**Better patient outcomes.** Diabetic patients and physician with strong patient-centered communication skills are consistently found to reports better A1C scores. To improve the physician’s ability to effectively communicate with their patient in an intimate education encounter builds trust.

**Patient already recording their encounter.** Because every smartphone can record conservation, it may become even more commonplace. The motivation is often reasonable: patients want a recording to listen to again, improve their recall and understanding of medical information, and share the information with family members. Liberate health puts control of recording into the hands of the HCP and provides a HIPAA compliant portal for the patient to store and share their recordings.

**Reduce malpractice risk.** The majority of malpractice claims involve some form of communication breakdown between physician and patient. At the barrow neurological institute, in phoenix, Arizona, where patients are routinely offered video recordings of their visits, clinicians who participate in these recordings receive a 10% reduction in the cost of their medical defense and $1 million extra liability coverage.

**Reduce disparities in care.** The evidence shows that physicians tend to be more paternalistic and directive when talking with ethnic patients, including sharing less information, compared to when communicating with white patients. Liberate health content is very visual and culturally diverse allowing the HCP to customize the discussion to the patient being engaged.

**Increased reimbursement.** CMS and many commercial payers now offer incentive payments for outcomes linked to patient-centered communication. Positive patient experience, reduced ER visits and hospital readmissions are measures for incentives based improving HCP communications. (benefits of patient-centered communications, by Richard Nordstrom, December 21, 2017, liberatehealth.us/benefits)

1. **Explain any six ways in which computer technology has improved service delivery in healthcare supporting your answers with practical examples?**

**Increased connectivity among physicians.** Digital platforms have redefined the social sphere, and new technology has made it easier than ever for physicians to connect with one another in order to share information. New apps have reached the market that allow physicians to postrecent findings and initiate conversations on their mobile devices, which reduces the amount of time needed to get in touch with colleagues.

**Smartphone-based devices offer readings, aid in the delivery of care.** Another major development is the ability of smartphone-based devices to monitor blood sugar level and heart rate. Companion devices go one step further and actually deliver care to patients. For instance, the Mini Med 670G can recognize when people with Type 1 diabetes need insulin and then administer the proper amount of medication automatically.

**Computers provide input on medical decisions.** As computers become more sophisticated, they are quickly becoming a valuable aid to health care professionals. Computers can now offer input on X-rays and similar diagnostics to help physicians make more timely and informed decisions. The same is true when it comes to developing new drugs and determining the best route for treating patients. Machines gather and analyze data in real time, providing a second opinions to health care professionals.

**New utility for 3D printing.** While the advent of 3D printing has impacted multiple markets, it has been particularly beneficial to the health care sector. For a low price, physicians can print out synthetic skin, implants, and prosthetics. They can also create realistic models to practice procedures.

**Greater access to DNA sequencing.** In 2003, researchers sequenced the human genome for the first time. The process, which lasted 13 years, cost nearly $3 billion to complete. Developments in technology have since reduced the cost to a mere $1,000. The data found in DNA is now more accessible to physicians and patients. Sequencing platforms continue to advance and open new doors.

**More online and mobile educational opportunities.** Aspiring health care professionals, particularly nurses, are finding it easier to pursue their education by taking courses online. Remote access to medical training has also made it easier for physicians to learn and expand their skill set in more isolated areas of the world. The increased ability to access education in formerly secluded regions of the world equates to more health care opportunities for people who truly need them.

**Reduced risk and recovery time.** Technological advancements have improved the safety of medical procedures. Due to technological innovations such as laser treatments, medical procedures are now less invasive and pose fewer risks. What’s more, the use of new technology has significantly reduced recovery time, in some case from several weeks down to a couple of days.

**Advancements in robotics and nanotechnology.** Besides laser technology, other recent developments include surgical robots and nano-devices. Through the use of these tools, physicians have been able to increase their accuracy and gain entry to formerly inaccessible areas. One nano-robot, for example, can actually swim through fluids in the body, including the bloodstream and the surface of the eye. (10 ways technology is improving health care by keith Krach, https://medium.com/@keithKrach/10-ways-technology-is-improving).

1. **How the mobile phone has affected on the management of diabetes**?

Diabetes mellitus is a common chronic disease caused by insufficient of secretion or action of hormone insulin. In the recent years many research and projects focused on design and development of mobile applications for self-management of diabetes. The applications are either prototypes or commercially available, are running on mobile phones or smart phones. The developed system is a window mobile 6.1 based application running on 3G mobile phones. The used mobile phone is the HTC touch diamond, which has a 2.8 screen size, supports wireless connectivity via Wi-Fi, and includes GPS. Additionally, the transmission network protocols supported by the device are 3G and GSM/GPRS. The application provides the patients with Diabetes with a series of graphical interfaces which allow them to enter, either manually or automatically, and store blood glucose level, information about insulin intake, physical activities including intensity and duration, nutrition habit and other data vital for diabetes management. The data are sent via wireless communication links to a server where physicians have access. The physician can monitor the state of the patients with diabetes, assess the follow up treatment and send feedback with advices on the needed treatment modifications. Mobile phones have effectively reduced mortality and morbidity due to diabetes as patients closely monitor their blood glucose levels and takes appropriate measures. The software examined in the research provided real-time feedback on patients' blood sugar levels, displayed medication regimens and served as a "virtual coach." A patient's blood sugar test results were sent wirelessly from a blood glucose monitor to the mobile phone. If the level was too low or too high, the software on the phone prompted the person to take steps to correct it. The system also analyzed blood sugar levels and other patient information and sent computer-generated logbooks and suggested treatment plans to the patients' primary care doctor. (Model seven Communication, computer technology in public health and HIV/AIDS &STI, pages 51-54)

1. **What are some advantages and disadvantages of computer technology in public health?**

Computer technology is used in creating lot of technologies that really plays an important role in maintaining the life in the present as well as in the future. the types generated in the field of computer networking or in this technological World are called as the types of the information technology. The following are the advantages and disadvantages of computer technology.

**Advantages,**

Globalization, information technology the modern World becomes closer in the ways of communication and provides the easy way for faster communication, which also enhances the economy and the profit of different types of business.

Communication, Information technology is used in developing different types of communicational devices and also helpful in better communication services between the two different places for the sake of good business and for many other purposes. It makes the communication services cheaper and convenient and also fast then other technologies

Creation of jobs, A major advantage of the information technology is that it provides the many ways for the jobs and increases the vacancies in the field. Because of the development of the new technologies in the field of information technology it provides the opportunity for the new generation to come in the technical field and generate the technology for the future.

Computers can avoid illegible handwriting, and can be programmed to find errors in dosage, medication name, medication interaction, and identifying allergic patient or the wrong patient.

Computerized records can be backed up and are less likely to be lost or unavailable, computerized records can more easily be transferred even long distances, more easily collect data such as mortality or number of patients seen or types of diagnosis seen.

It decreases the amount of class time where is information transfer without interaction, increase amount of time available to answer questions and concentrate on confusing and difficult topics, teach medical/Nursing students and residents how to effectively get the most accurate, useful, and up to date information through computer programs.

Computer technology decreases amount of time needed to reads journals and books while still maintain high-quality knowledge.

Possibility of measuring the area of citizenship, thus added valve to medical services and achieved contact with citizen without geographic restrictions. Extraction and utilization of measurable data for statistical and research purposes.

Improved quality of life due to better management of diseases and direct communication with physician regardless of geographically distance. Increased sense of patient safety, possibility of preventive medicine, confidence and wellbeing of patients and monitoring of health status patients by the physician.

**Disadvantages,**

The computer technology is less useful for physicians, Nurses who cannot type quickly, it takes extra time and efforts to get used to.

Computer technology creates psychological discomfort with a new ways of practicing medicine, be vulnerable to viruses and technical problems that risk loss of data unless backed up.

The computers are vulnerable to breaches of patient confidentiality, sometimes increase the amount of time needed to get work done.

It creates fear that computerized data can be used by legal system against doctors and hospitals and fear of making the interaction between the patient and doctors seem less personal and, have high cost at start-up. (Model seven Communication, computer technology in public health and HIV/AIDS &STI, advantages and disadvantages of computer technology, pages 59-61)

1. **With one example, explain prevention of sexually transmitted disease?**

Gonorrhea is caused by bacterium *Neisseria gonorrhea,* is the second most commonly reported notifiable disease in the US. More than 800,000 people become infected with gonorrhea every year with highest reported rates of infection among sexually active teenagers, young adults, and African Americans aged 15-24. *N. gonorrhea,* a Gram negative, diplococcic, can grow and rapidly multiply in mucous membranes, especially the mouth, throat, and anus of males and females, and the cervix, fallopian tubes, and uterus of the female reproductive tract. *N. gonorrhoeae* has surface proteins called Opa proteins, which bind to receptors on immune cells and inhibit immune responses. The bacterium can also evade the immune system through antigenic variation decreases immunological recognition in order to mount a defense. Moreover, *N. gonorrhoeae* is naturally capable of DNA transformation, which can lead to antibiotic resistance. Gonorrhea is transmitted by contact with fluids from mucous membranes of infected individuals through sexual contact with the penis, vagina, mouth, or anus. Gonorrhea can also be spread vertically from mother to baby during childbirth, which can lead to blood, joint, and eye infections.

**Symptoms, Signs and treatment of Gonorrhea**.

Men are more likely to have symptomatic infection than women with only 10% of men having no symptoms. Common symptoms in men include a burning sensation when urinating, or a urethral discharge that usually appears one to fourteen days after infection. In contrast to women for whom 80% are asymptomatic. If symptoms are present in women, they are often mild and can be mistaken for a bladder or vaginal infection. symptoms in women can include a painful or burning sensation when urinating, increased vaginal discharge, or vaginal bleeding between periods. The CDC predicts the inevitable development of resistance to cephalosporins and published the new recommendations for treating all cases of gonorrhea with both a cephalosporin and azithromycin in order to slow development of resistance.

**Complication of Gonorrhea**

During pregnancy, untreated gonorrhea can cause premature labor and stillbirth. Similar to chlamydia, untreated gonorrhea infection in women can lead to pelvic inflammatory disease (PID), leading to infertility, ectopic pregnancies and chronic pelvic pain. In men, prolonged infection leads to urethral healing with scaring causing urethral strictures with consequence of acute urine retention and sterility if left untreated.

**Prevention of Gonorrhea**

**Primary prevention**

* Changing sexual behaviors that increase the risk of acquiring an gonorrhea. This can be achieved through the education and counseling of at-risk persons on safer sexual behaviors.
* The best protection against gonorrhea is to practice abstinence or remain monogamous with an uninfected partner.
* Sexually active individuals can protect themselves by the correct and consistent use of latex condoms.

**Secondary prevention**

* Consists of standardized detection and effective treatment of gonorrhea, annual screening for chlamydial infection in all sexually active women 24 years and younger and in women older than 24 years who are at risk of gonorrhea.
* Careful and complete contact tracing for infected symptomatic and asymptomatic sexual partners is necessary to break the cycle of gonorrhea transmission in the community and prevents reinfection repeat exposure to sexual partners with unrecognized infection.
* Industry should work together with local health providers to set up partnerships offering health services to workers outside normal business hours.
* Partnerships can also be established with local health departments to provide STI related information that can be available to workers onsite.
* Providing information about locations of HIV and STI testing is essential to encourage early case finding and linkage to care.
* Information should also be provided about how to access primary care services, alcohol and drug treatment, and other support services that promote healthy behaviors.
* Integration of STI testing as part of routine medical care is a smart approach to reduce the stigma associated with testing.
* Educational programs and modeling of non-stigmatizing behavior can teach healthcare providers to provide unbiased care and for the development of service models that encourage utilization.
* Educating healthcare professionals in the attitudes, knowledge and skills necessary for providing quality, culturally competent, and linguistically appropriate care to a diverse population is paramount.
* Educating the community helps individuals make informed decisions with regard to the prevention of STIs.
* Establishing partnerships with non-clinical, youth-serving, community-based programs, government and non-government family planning programs and schools will help establish community "ownership" of STI prevention as part of an enduring, sustainable effort.
* Outreach can be used to raise awareness of the problem of STDs and HIV, to provide education on ways that the disease is transmitted and ways to reduce risk of infection, and to provide information of available services.
* Stigma reduction strategies like, promoting normalcy, using sex positive language, maintaining open, honest communication while discussing STDs, and using medically accurate, age-appropriate information needs to be considered in education programs. (Model seven communication and computer technology in public health and HIV/AIDS & STI pages 67-68, 69-77)

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