ATHYNA.EDUCATION

health SYSTEMS

TUTORIAL - CASE STUDY OF MRS. A

Systems Thinking in Health Systems

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LEARNING OUTCOMES

By the end of the lecture and tutorial, students should be able to:

1. Describe the building blocks of health systems
2. Identify key healthcare financing models
3. Identify key components of the Australian health system
4. Discuss the importance of ‘systems thinking’ in health system and the role of adverse patient outcomes in the improvement of healthcare delivery

Systems Thinking in Health Systems

Case Study of Mrs. A

CONTEXT OF DENGUE IN THE 2019 CASE OF MRS. A

The year 2019 saw the record highest number of 130, 101 dengue cases recorded in Malaysia, (1) surpassing the 120,836 cases recorded in 2015 (2). Selangor continued to record the highest number of cases in the country.

At the national level, there is a Dengue Task Force (3). There are dengue monitoring mechanisms in place at the district, state and national levels (3).The Ministry of Health (MOH) utilizes Geographical Information System (GIS) to map disease patterns (3). MOH also monitors epidemiological studies of diseases according to age, gender and ethnic groups (3).

The Star reported Dr Noor Hisham, the Director General of Health saying that the changing rainy and hot seasons resulting in stagnant water collected, movement of people, and increase in population density in urban areas as reasons for the spread of dengue (4).

Other government reports from previous years attributed the rise in dengue cases to rapid urbanization, expanding urban population, poverty, ineffective public health infrastructure, faster modes of transportation, globalization of trade and increased international travel (5).They also noted that contractors with weak credentials failed to collect rubbish regularly, drains were left clogged (3), the amount of solid waste at landfill sites exceeded the limit, rubbish bins were too small for household waste, and there were needless delays in dealing with complaints (3). Others cite little consideration of environmental health in urban policy and even less formal interaction between public health officials and the planners and policy makers undertaking urban

development (6).

The problem is exacerbated by the local authorities' inability to communicate their messages effectively through awareness campaigns (3). Health information programs are hampered by a high turnover of volunteer staff and lack of innovative ways to engage the public (3).

Dengue epidemics pose a burden to the national health care system as critical resources such as time, hospital beds, finances, and staff have to be diverted from other serious disease areas during this time (7).

During an outbreak in 2019, the Director of a Government Hospital in the Klang Valley stated that the hospital was unable to admit patients because the beds were all full. The case of Mrs. A unfolds during this time.

MRS. A: PROFILE

Mrs. A is a 70-year-old retired clerk. Until her retirement at age 55, she was covered by a group health insurance company purchased by her company. Upon retirement, she used her personal medical insurance which did not give her the same extent of coverage as the previous insurance coverage provided by her employer. She had trouble upgrading her personal medical insurance because of existing diabetes.

SEEKING TREATMENT FOR DENGUE

In March 2019, she developed fever with chills and rigors which continued for three days despite self-medication with paracetamol. She suspected that she might be having dengue because several of her neighbors had been admitted to hospital for dengue. Mrs. A went to the public hospital where she was being treated for her diabetes. Investigations were carried out on her. She was diagnosed to have dengue fever. She was advised admission but all the beds in the female wards were full. Thus, her family got her admitted to a private hospital.

ENTRY INTO THE HEALTH CARE SYSTEM

In the private hospital, a full examination was done by the Medical Officer (MO) on call in the Accident and

Emergency (A & E) Unit who ordered a full blood count (FBC), blood urea and serum electrolytes (BUSE), and blood sugars (RBS). All systems (CVS, RS etc) were normal. The only finding on general examination was clinical features of dehydration (dry tongue, dry mucous membranes, sunken-appearing eyes, and decreased skin turgor). Her vital signs (pulse rate, respiratory rate, BP) were normal. The full blood count results came back with a platelet count of less than 70 x 109/dl. The values of the other laboratory investigations were within the normal range. A diagnosis of dengue was made.

INPATIENT ADMISSION

The MO advised admission. However, she could not be admitted immediately because they had to wait for five hours for the insurance company to approve the admission. An intravenous fluid (1/5 dextrose saline) drip was set up and vital signs were monitored every one hour. She was also given paracetamol for her fever. After five hours, at close to 7 p.m., she was taken to the ward and admitted to a room for four patients

according to her insurance coverage.

In the ward, the nurses contacted the physician on call who ordered treatment over the phone. The finger stick blood test revealed a value of 12 mmol/L. The physician on call was contacted again and he ordered a change of the IV drip to normal saline. The physician arrived in the hospital one hour after the patient was admitted to the female ward. He spent 15 minutes with the patient taking a brief history and doing a brief examination. He then ordered the continuation of the treatment, i.e., of fluids and paracetamol and three hourly checks of blood sugar and vital signs. An FBC and RBS was again ordered. The doctor left the hospital.

The nurses changed shift at 9 p.m. Replacing the four nurses in the day shift were only two nurses on duty for the night shift as per practice. However, one nurse who was supposed to be on duty called in sick. It took one hour to get a replacement for the nurse. In the meantime, there was another admission of a patient with acute appendicitis in the female

ward. Being under-staffed and attending to the newly admitted patient, the nurses forgot to monitor Mrs. A.

When they received the FBC results, they remembered that they had forgotten to monitor the patient. The platelet count had fallen to 45 x 109/dl, and her latest BP reading was 90/60 mmHg. The physician who was immediately informed about the situation by phone, ordered two packs of platelets to be transfused. He also ordered an FBC to be done after transfusion. During transfusion, the patient was noted to have petechiae and gum bleeding. Her blood pressure dropped to 70/50 mmHg, she became unconscious and went into shock. The nurses frantically informed the physician over the phone and also called the MO from the A&E to attend to Mrs. A. When the MO arrived, CPR was initiated, and the patient was intubated and transferred to the Intensive Care Unit (ICU). The physician arrived after the patient was transferred to the ICU.

Mrs. A was stabilized. During the treatment in the ICU, her platelet count increased to 120 x 109/dl. She could breathe without assisted ventilation and was transferred to the ward after four days.

DISCHARGE

Mrs. A was in the hospital for about six days, and the bill came to RM 20,000.00. This amount exceeded her insurance coverage. Her family had to borrow money to pay the balance of the bill that was not covered by her medical insurance. She was discharged with paracetamol and vitamins, which cost her 50 percent more than the cost she would have paid at a private pharmacy. These medications would have been provided free of charge had she been treated in a government hospital.

1. Fong LF, Ahmad R. Number of dengue cases set to hit all-time high [online]. The Star; 2019 [Available from: https://www.thestar.com.my/news/nation/2019/12/01/number-of-dengue-cases-set-to-hit-all-time-high.
2. Kementerian Kesihatan Malaysia. Dengue incidence rate & case fatality rate 2000-2016: Malaysian Remote Sensing Agency (ARSM), Kementerian Sains, Teknologi & Inovasi (MOSTI) dan Bahagian Kawalan Penyakit (BKP), Kementarian Kesihatan Malaysia (KKM) 2017 [Available from: http://idengue.remotesensing.gov.my/idengue/content/statistik.pdf.
3. Anthony MC, Cook ADB, Amul GGH, Sharma A. Health governance and dengue in southeast Asia. NTS Report No. 2. May 2015 Singapore: S. Rajaratnam School of International Studies, Nanyang Technological University; 2015 [Available from: https://www.rsis.edu.sg/wp-content/uploads/2015/06/NTS-Report-No-2-10June2015.pdf.
4. Fong LF. Dengue cases at an all-time high [online]: The Star; 2019 [Available from: https://www.thestar.com.my/news/nation/2019/08/10/dengue-cases-at-an-all-time-high.
5. Malaysia. Dengue incidence rate & case fatality rate 2000-2016: Malaysian Remote Sensing Agency (ARSM), Kementerian Sains, Teknologi & Inovasi (MOSTI) dan Bahagian Kawalan Penyakit (BKP), Kementarian Kesihatan Malaysia (KKM); [Available from: http://idengue.remotesensing.gov.my/idengue/content/statistik.pdf.
6. Mulligan K, Elliott SJ, Schuster-Wallace C. The place of health and the health of place: Dengue fever and urban governance in Putrajaya, Malaysia. Health & Place. 2012;18(3):613-20.
7. Liew SM, Khoo EM, Ho BK, Lee YK, Omar M, Ayadurai V, et al. Dengue in Malaysia: Factors associated with dengue mortality from a national registry. PloS one. 2016;11(6):e0157631

IN-CLASS TUTORIAL TASK - GROUP DISCUSSION & SHARING:

1. Using the health system building blocks framework, treat each component as a subsystem and outline the primary issues related to Mrs. A's case in each building block. Focus also on how issues within one building block affect others and their broader impact on public health and patient care.
   Example:
   LEADERSHIP AND GOVERNANCE:
   - *The lack of effective policies and frameworks (within Leadership and Governance) to address environmental health and urban development resulted in a surge in dengue cases and intensified pressure on the building block of Service Delivery in the public hospital.*

Now, refer to the Care Pathway figure on the next page to present your analysis of how the performance of the the health system's building blocks impacted Mrs. A's healthcare delivery and what actions are required to improve healthcare delivery.
An MS Word document of the figure has also been provided on Moodle and Athyna.

- Your care pathway analysis should illustrate Mrs. A's pathway through the healthcare system and how the performance of the building blocks impacted the delivery of care for Mrs. A.
- Identify points along the pathway where improvements in the functioning of the building blocks could have enhanced the responsiveness and effectiveness of care for Mrs. A.
- Annotate points in the pathway highlighting the exact change needed at that stage to improve Mrs. A's care experience.
- Follow the example provided on page 11 for reference.

Before the end of the tutorial, one student (rotating each session) will lead the group in presenting a two-minute integrated summary of the group's self-reflection to the rest of the class.

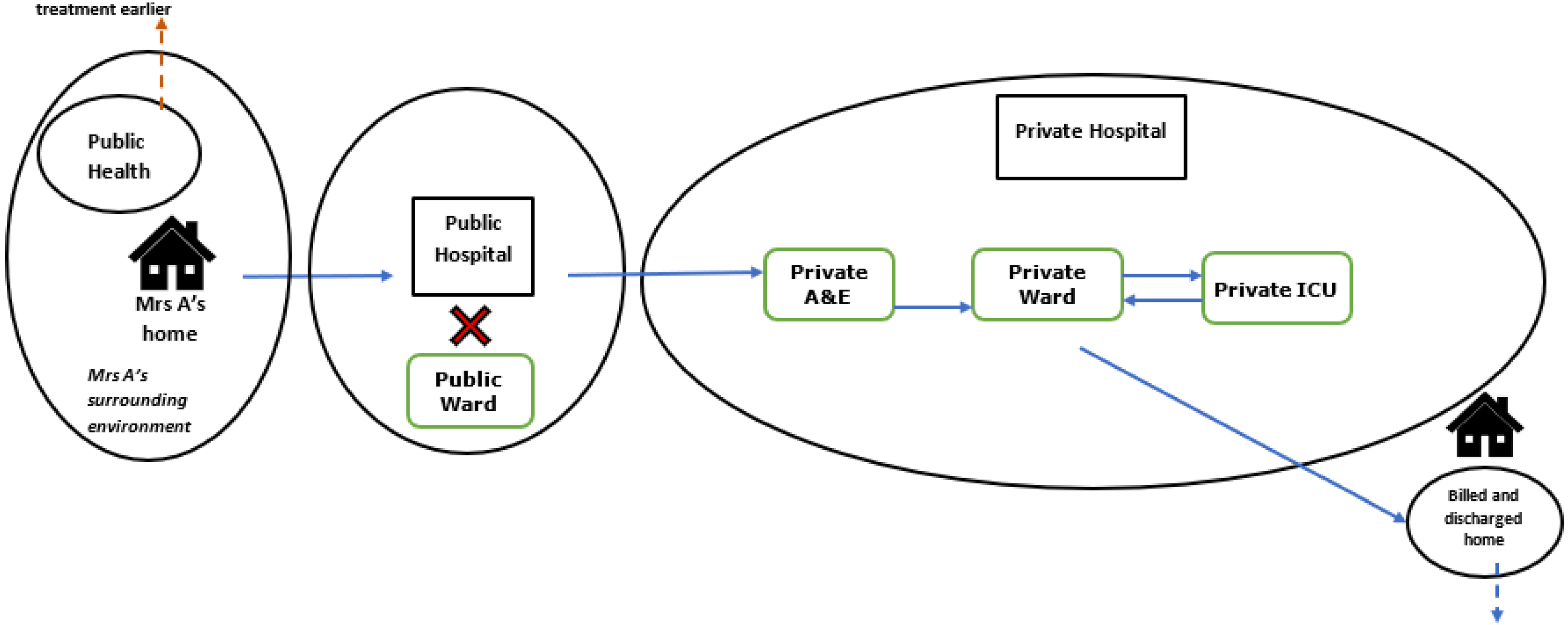
Mrs. A's Pathway of Care

1 **Weak LEADERSHIP & GOVERNANCE:**

- **Public health agencies should ensure better rubbish and waste management surrounding Mrs A's home.**

HEALTH INFO gaps:

- **Effective health prevention and promotion on dengue should be disseminated so that Mrs. A could have had better health awareness about prevention and would have sought treatment earlier**



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"If access to health care is considered a human right, who is considered human enough to have that right?" Dr. Paul Farmer

THEME II:POPULATION, SOCIETY HEALTH AND ILLNESS
Med1100/1200 Semester 1

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