Name:

UFID:

HW 1 - Special Topics in CIS: Digital Health - Spring 2022

Prof Sumi Helal

Due 1 hour before Exam I Begins

Q1. What is the difference between wellness, fitness, and personal health? (Max 40 words) - *(5 pts)*

Note: Consider the PHQ-9 depression assessment instrument and the GAD-7 anxiety assessment instruments attached to this homework

Q2. What could be challenging to the patients in filling these paper and pencil surveys? *(5 pts)*

Q3. If you were to use a mobile app to provide a better instrument for depression and anxiety, how would you design the app in terms of who initiates the interactions (the app or the user), in what contexts, and how frequently? - *(5 pts)*

Q4. If your mobile app in Q3 works well, what additional services can the mental health professionals (the care providers) be able to offer and provide their patients? - *(5 pts)*

Q5. In the "Modeling the quality of life goals of people living with dementia," paper, what does the modeling aim to do? - *(5 pts)*

The following questions Concern Barton & Grant's Determinants of Health Conceptualization.

Q6. What is dementia? (75 words max). - *(5 pts)*

Q7. Recall Barton and Grant's Health map (see figure attached). Explain how you would use such a health map to design age-friendly neighborhoods for older adults living with dementia and aging in place. **Describe your design as a list of succinct bullets (and if you wish, sub-bullets). (200 words max).** - *(15 pts)*
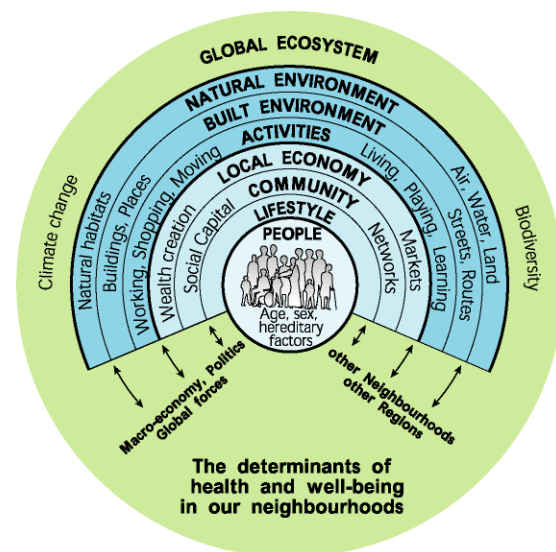
Q8. What two key policies do you think should be in place to support your age-friendly neighborhood design? Express the policies in the fewest words. - *(5 pts)*

The following questions are about the healthcare delivery systems today and in the future

Q9. What is a point-of-care health delivery model? - *(5 pts)*

Q10. Does the Electronic Health Record help in the point-of-care system? - *(5 pts)*

Q11. Describe the FHIR interoperability standard (30 words max), and give three examples of what it may enable (each example is no more than 12 words) - *(10 pts)*

Q12. In the future of health, wearables and personal health devices will keep a continuous record of people's health conditions, and therapeutic algorithms will be able to help in precise assessment and personalized intervention design if needed. Yet, wearables and personal health devices may not be adequate in diagnosing certain diseases or conditions. Specialized home-kits may need to be shipped to the patients prior to a telehealth session (the physician and the patients are connected via teleconference during a scheduled virtual visit). The patient uses the home-kit as directed during the telehealth session and then ships back the kit unless it is disposable. **What are the key technical requirements of such home-kits to enable such a future involving home-kits and telehealth? (60 words max) -** *(10 pts)*

The following questions are about the healthcare Clinical Efficiency

If the conversation between the physician and the patient is captured and converted into text successfully:

Q13. What are the possible uses of this data? Mention at least two uses - *(5 pts)*

Q14. What is the best representation (digitalization) of the text data with respect to the potential uses? Suggest a specific presentation and justify your choice(s). - *(5 pts)*

Q15. How can the digitized conversation be used to assist the physician in interacting with the Clinical Decision Support System (CDSS) within which the Electronic Health Record is accessed? *- (5 pts)*

Q16. How can digitized conversations be used in health and medicine education? *- (5 pts)*

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

ID #: _____   **DATE:**_____

Over the last *2 weeks,* how often have you been
bothered by any of the following problems?
(use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite — being so figety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3

add columns [   ] + [   ] + [   ]

(Healthcare professional: For interpretation of TOTAL,   TOTAL: [   ]
please refer to accompanying scoring card).

10. If you checked off *any problems,* how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	_____
	Somewhat difficult	_____
	Very difficult	_____
	Extremely difficult	_____

PHQ-9 Patient Depression Questionnaire

For initial diagnosis:

1. Patient completes PHQ-9 Quick Depression Assessment.
2. If there are at least 4 ✓s in the shaded section (including Questions #1 and #2), consider a depressive disorder. Add score to determine severity.

Consider Major Depressive Disorder

- if there are at least 5 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Consider Other Depressive Disorder

- if there are 2-4 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Note: Since the questionnaire relies on patient self-report, all responses should be verified by the clinician, and a definitive diagnosis is made on clinical grounds taking into account how well the patient understood the questionnaire, as well as other relevant information from the patient.
Diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairment of social, occupational, or other important areas of functioning (Question #10) and ruling out normal bereavement, a history of a Manic Episode (Bipolar Disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms.

To monitor severity over time for newly diagnosed patients or patients in current treatment for depression:

1. Patients may complete questionnaires at baseline and at regular intervals (eg, every 2 weeks) at home and bring them in at their next appointment for scoring or they may complete the questionnaire during each scheduled appointment.
2. Add up ✓s by column. For every ✓: Several days = 1 More than half the days = 2 Nearly every day = 3
3. Add together column scores to get a TOTAL score.
4. Refer to the accompanying **PHQ-9 Scoring Box** to interpret the TOTAL score.
5. Results may be included in patient files to assist you in setting up a treatment goal, determining degree of response, as well as guiding treatment intervention.

Scoring: add up all checked boxes on PHQ-9

For every ✓ Not at all = 0; Several days = 1;
More than half the days = 2; Nearly every day = 3

Interpretation of Total Score

Total Score	Depression Severity
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

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GAD-7 Anxiety

Over the last two weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid, as if something awful might happen	0	1	2	3

Column totals _____ + _____ + _____ + _____ =

Total score _____

If you checked any problems, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Scoring GAD-7 Anxiety Severity

This is calculated by assigning scores of 0, 1, 2, and 3 to the response categories, respectively, of "not at all," "several days," "more than half the days," and "nearly every day."
GAD-7 total score for the seven items ranges from 0 to 21.

0–4: minimal anxiety

5–9: mild anxiety

10–14: moderate anxiety

15–21: severe anxiety