Model of Disease causation theories

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A model is a representation of a system that specifies its components and the relationships among the variables.
E.g. includes graphs, charts, and decision trees

I – Nineteen-century models Each effort to prevent disease in the 19th century was based on one or the other three theories of disease causality. These are:
1. Contagion theory
2. Supernatural theory
3. Personal behavior theory
4. Miasma theory

Contagion theory
This theory was common at the beginning of the 19th century. Most official disease prevention activities were based on the hypothesis that illness is contagious. It required:

- Keeping sick people away from well people.
- The institution of quarantine of ships (the traditional period was forty days la quarantine) during which time ships, their crews and cargos waited offshore or at some isolated islands.
- Setting up military cordons around infected towns
- Isolation of households if they were infected, and
- Fumigating or washing the bedding and clothing of the sick.

Problems confounded the acceptance of this theory were There were too many instances where people become ill regardless of their isolation from human contact and Too many others where brave souls nursed the dying and carried their bodies to the graveyard yet remained well.

Supernatural theory
Proponents of this theory argue that supernatural forces cause disease. Disease prevention measures based on this theory were important to the religious people. The view among them was that disease is a punishment for transgression of God’s laws.

Because epidemic took a great toll on the poor than the rich, the healthier rich can employ the supernatural theory as a justification for berating for the poor for sinful behavior i.e. presumed idleness, intemperance and uncleanness.
This theory expressed a political philosophy. People could not advocate the belief that sin causes disease with out, at the same time, implicitly supporting the idea that government need to redress poverty.
**Personal behavior theory**
This theory held that disease results from wrong personal behavior. It was democratic and authoritarian in intent since it gave responsibility to individuals to control their own lives. In this formulation the source of the disease was not tied up with the mysterious ways of God, instead, people caused their own disease by living fully unhealthy. Hence, improper diet, lack of exercise, poor hygiene and emotional tension become the focus of preventive actions. This theory does not blame the poor for the illness and in many aspects; it was an homage to a middle-class life.

**Miasma theory**
This theory argues that disease is caused by the odor of decaying of organic materials. It dates back to the Hippocratic idea that disease is related to climate. It contrasted sharply from the other three theories since it conceptually separated the source of the disease from the victim of the disease.

**Twenty-century models**
Although economic and ideological considerations influenced the 19th century disease prevention policy, sound research determines policy today. The 20th century theory focuses on:
1. **The Germ Theory**
2. **The LifeStyle Theory**
3. **The Environmental Theory**
4. **The Multi Causal Theory**

**The Germ Theory**
This theory rapidly overtook other explanations of disease causations. It held the notion that microorganisms cause diseases and it is possible to control diseases using antibiotics and vaccines. There was criticism on this theory by Thomas Mckeown that stated as the incidence of all major infectious diseases begun to fall several decades before the introduction of vaccines and antibiotics. Thus rising of living standards was responsible for the reduction of disease not the discovery of antibiotics and vaccines.

**The LifeStyle Theory**
This holds that unhealthy lifestyles are causes for diseases. This hypothesis blames stress, lack of exercise, the use of alcohol and tobacco improper nutrition for most chronic diseases. This theory rejects the notion central to the classic germ theory, that a single disease has a single etiology. Instead they emphasize the interrelatedness of many variables in disease causality, principally those under the control of the individual. Nevertheless, this approach resembles the germ theory, for it conceives of disease as an individual event, the difference is that prevention, instead of requiring physicians’ ministrations, demand personal behavior change. The critics surrounding this theory state that the change for lifestyle requires overall social change.

**The Environmental Theory**
Environmental theory explains that significant number of chronic disease are caused by toxins in the environment and it implies that disease prevention, instead of requiring medical treatments or personal hygiene, demands change in the industrial production.
The first aspect of the environmental hypothesis is occupational hazards, the second concentrates on toxic substances in the air water and soil (advocates of this theory places particular emphasis on radioactivity), and the third aspect focus on synthetic additives to foods “organic foods”. Two scientific disputes surround the hypothesis viz the suitability of extrapolating from animals to humans and the concept of threshold levels.

**The Multi Causal Theory**

It is also called the web of disease causation. The theory express that there are multiple factors for a cause of a single disease entity. But it is incapable of directing a truly effective disease prevention policy as the theories it replaces. Its shortcomings are it gives few clues about how to prevent disease, the actual prevention policies it implies are inefficient in many ways and there is a gap between what it promises and what epidemiologists deliver.