Jen Johnson BIOL310 CW1

Nosocomial vs Community Acquired. (1)

Definitions.

Is it such a *big* problem?

Yes! It is under reported because it is hard to diagnose. (1)

Lack of diagnosis causes problems:

Complicated symptoms (people have pre-existing conditions, cause of exposure in the first place) 🡪harder to treat (2)

Extended hospital stays 🡪higher costs

**Solution to diagnosis problem: technology?**

“molecular typing has provided persuasive evidence for person-to-person spread. (3)

Before: phenotypic characteristics. (4)

For distinguishing hidden strains and increase efficiency of treatment. (5)

Also for surveillance/routine monitoring. (5)

“Isolation of the same strain from both

patients and from the hospital environment is highly suggestive of a nosocomial infection.” (6)

Needs to have discriminatory power.

Rapid, inexpensive, reproducible, easy to perform. (7)

Also need to automate methods, improve throughput, increase capacity/organization of databases. (7)

Use multiple methods at a time? (7)

Trade off for WGS: cost and accuracy. (7)

**Limitations**

Another solution to nosocomial disease at its cause:

Sanitation bc of cause: Contamination of hospitals. Improper cleaning increases risk. Methods should be assessed for efficiency and cost. (8)

“Compomised hosts” (book pg 764). Resistance mechanisms are inactive. Invasive procedures, stress, anti-inflammatory drugs reduce host resistance.

Medical Procedures. Barrier breaching can introduce pathogens. (book pg 832)

* Antibacterial Solution.
  + 80% removed by detergent
* Technological Solution.
  + Vacuum, steam cleaners
  + Too labor intensive? (8)
  + **Automated technologies can enhance, but should not replace.** (8)
  + Disinfection robot and “removes the element of human error” (9)
  + **Limitations: education/protocol is also essential.**
  + **Huge limitation: resistance.**
* Hospital Protocol Solution:
  + safety precautions/treatments (3)
  + Need to decontaminate reuseable materials. (8)
  + Education of cleaning staff. (8)
  + Challenge: forgetting or neglecting during busy times. (8)
* Social/behavioral solution.
  + US: penalties for hospitals that do not comply with standards. (8)
  + Accessibility of stations and use of gels improves compliance with hand washing. (10)

**Ultimate Solution and Ultimate limitation.**

“Ultimate” solution is vaccines.

However, this is not the case, since there is antibiotic resistance.

Related Issue/foreshadowing for the next assignment:

Virus excretion for extended periods of time may provide a favorable environment for the emergence of resistant strains. (2)

M.organisms will exploit an inadequately cleaned niche to exchange genetic material coding for antimicrobial resistance and other survival mechanisms.

Shorter treatment duration and correct dosage will reduce selection pressure for resistance. (10)

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