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Please read this bit first

The HPCSA and the Med Tech Society have confirmed that this clinical case study, plus your routine review of your EQA reports from Thistle QA, should be documented as a "Journal Club" activity. This means that you must record those attending for CEU purposes. Thistle will **not** issue a certificate to cover these activities, nor send out "correct" answers to the CEU questions at the end of this case study.

The Thistle QA CEU No is: **MT00025.**

Each attendee should claim **THREE** CEU points for completing this Quality Control Journal Club exercise, and retain a copy of the relevant Thistle QA Participation Certificate as proof of registration on a Thistle QA EQA.

Cycle 24 - Organism 9:

E coli and UTI

Escherichia (E.) coli is responsible for 75 - 90% of uncomplicated cystitis cases in younger women and in more than half the cases in older women (over age 50). In most cases of UTI, *E. coli,* which originates as a harmless microorganism in the intestines, spreads to the vaginal passage, where it invades and colonizes the urinary tract. Some bacteria may be able to invade into deeper tissue in the bladder, where they survive to re-infect the patient after resolution of the previous infection.

The bacteria that cause most UTIs are very common and nearly everyone harbours them. It is not clear how they proliferate and break down the natural defences of the body. Among the possible ways this occurs are:

Changes in the Acid-Alkaline Balance of the Urinary Tract. Changes in the amount or type of acid within the genital and urinary tracts are major contributors to lowering the resistance to infection. For example, beneficial organisms called *lactobacilli* increase the acidic environment in the urinary tract. Reductions in their number (which, for example, occurs with estrogen loss after menopause), *increases* pH and therefore the risk of infection.

Biofilm. One theory, called the biofilm mode of growth, suggests that sometimes bacteria form capsules that adhere to the urinary tract, which protects them from many of the body's normal defences.

Infections of the urinary tract are the second most common type of infection in the body. Urinary tract infections (UTIs) account for about 8.3 million doctor visits each year in the USA. Women are especially prone to UTIs for reasons that are not yet well understood. One woman in five develops a UTI during her lifetime. UTIs in men are not as common as in women but can be very serious when they do occur.

Normally, urine is sterile. It is usually free of bacteria, viruses, and fungi but does contain fluids, salts, and waste products. An infection occurs when tiny organisms, usually bacteria from the digestive tract, cling to the opening of the urethra and begin to multiply. The urethra is the tube that carries urine from the bladder to outside the body. Most infections arise from one type of bacteria, *Escherichia coli (E. coli),* which normally lives in the colon.

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Some people are more prone to getting a UTI than others. Any abnormality of the urinary tract that obstructs the flow of urine (a kidney stone, for example) sets the stage for an infection. An enlarged prostate gland also can slow the flow of urine, thus raising the risk of infection.

A common source of infection is catheters, or tubes, placed in the urethra and bladder. A person who cannot void or who is unconscious or critically ill often needs a catheter that stays in place for a long time. Some people, especially the elderly or those with nervous system disorders who lose bladder control, may need a catheter for life. Bacteria on the catheter can infect the bladder, so hospital staff take special care to keep the catheter clean and remove it as soon as possible.

According to several studies, women who use a diaphragm are more likely to develop a UTI than women who use other forms of birth control. Recently, researchers found that women whose partners use a condom with spermicidal foam also tend to have growth of *E. coli* bacteria in the vagina.

Not everyone with a UTI has symptoms, but most people get at least some symptoms. These may include a frequent urge to urinate and a painful, burning feeling in the area of the bladder or urethra during urination. It is not unusual to feel bad all over—tired, shaky, washed out—and to feel pain even when not urinating. Often women feel an uncomfortable pressure above the pubic bone, and some men experience a fullness in the rectum. It is common for a person with a urinary infection to complain that, despite the urge to urinate, only a small amount of urine is passed. The urine itself may look milky or cloudy, even reddish if blood is present. Normally, a UTI does not cause fever if it is in the bladder or urethra. A fever may mean that the infection has reached the kidneys. Other symptoms of a kidney infection include pain in the back or side below the ribs, nausea, or vomiting.

Women who have had three UTIs are likely to continue having them. Four out of five such women get another within 18 months of the last UTI. Many women have them even more often. Doctors suggest some additional steps that a woman can take on her own to avoid an infection:

- Drink plenty of water every day.
- Urinate when you feel the need; don't resist the urge to urinate.
- Wipe from front to back to prevent bacteria around the anus from entering the vagina or urethra.
- Take showers instead of baths.
- Cleanse the genital area before sexual intercourse.
- Avoid using feminine hygiene sprays and scented douches, which may irritate the urethra.

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CPD Questions:

1. Why are elderly females more likely to suffer from UTIs?
2. What percentage of UTIs are caused by E coli?
3. What percentage of females will suffer a UTI or multiple UTIs during her lifetime?