

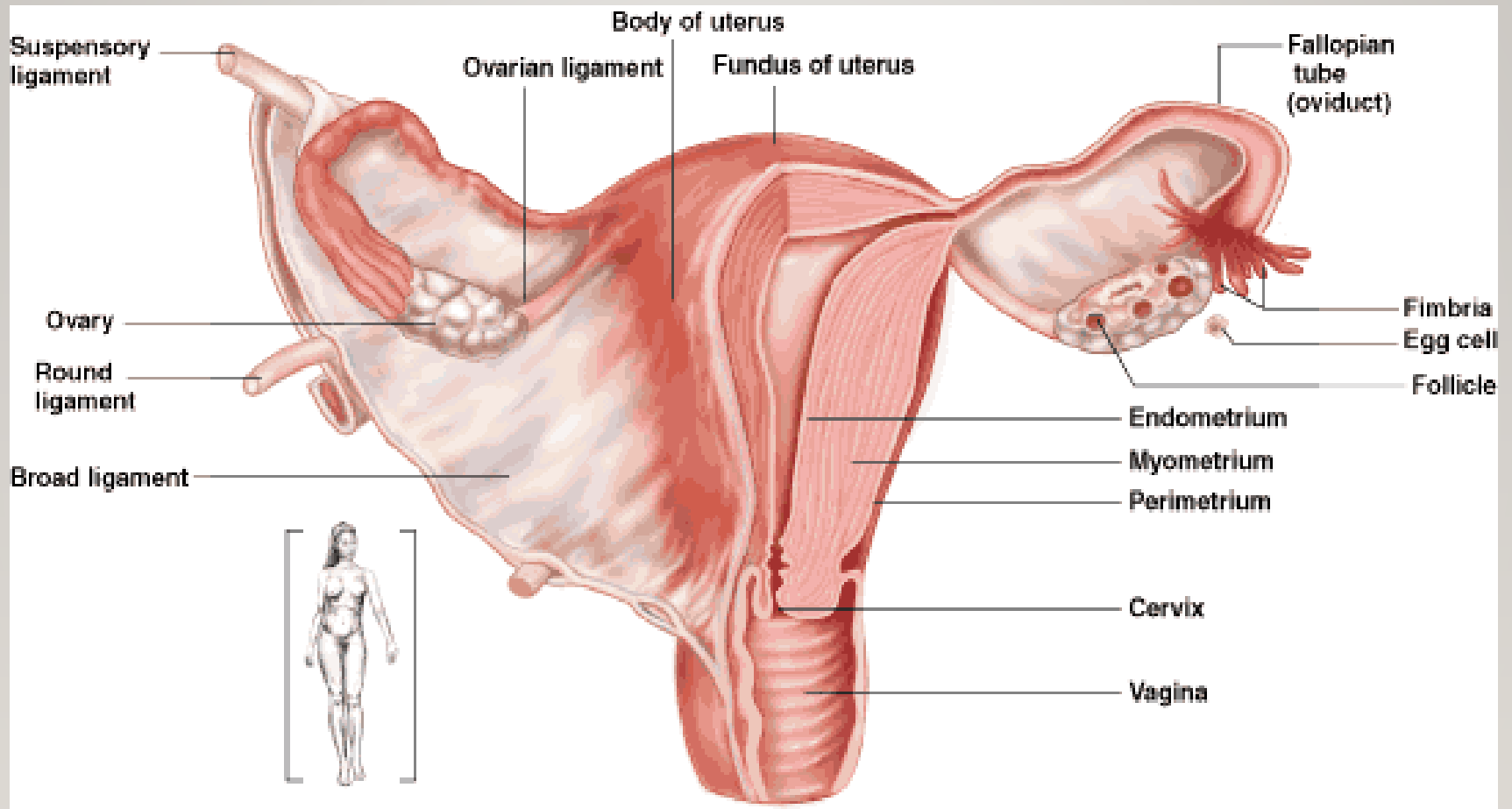
Women's Health: Pelvic Region

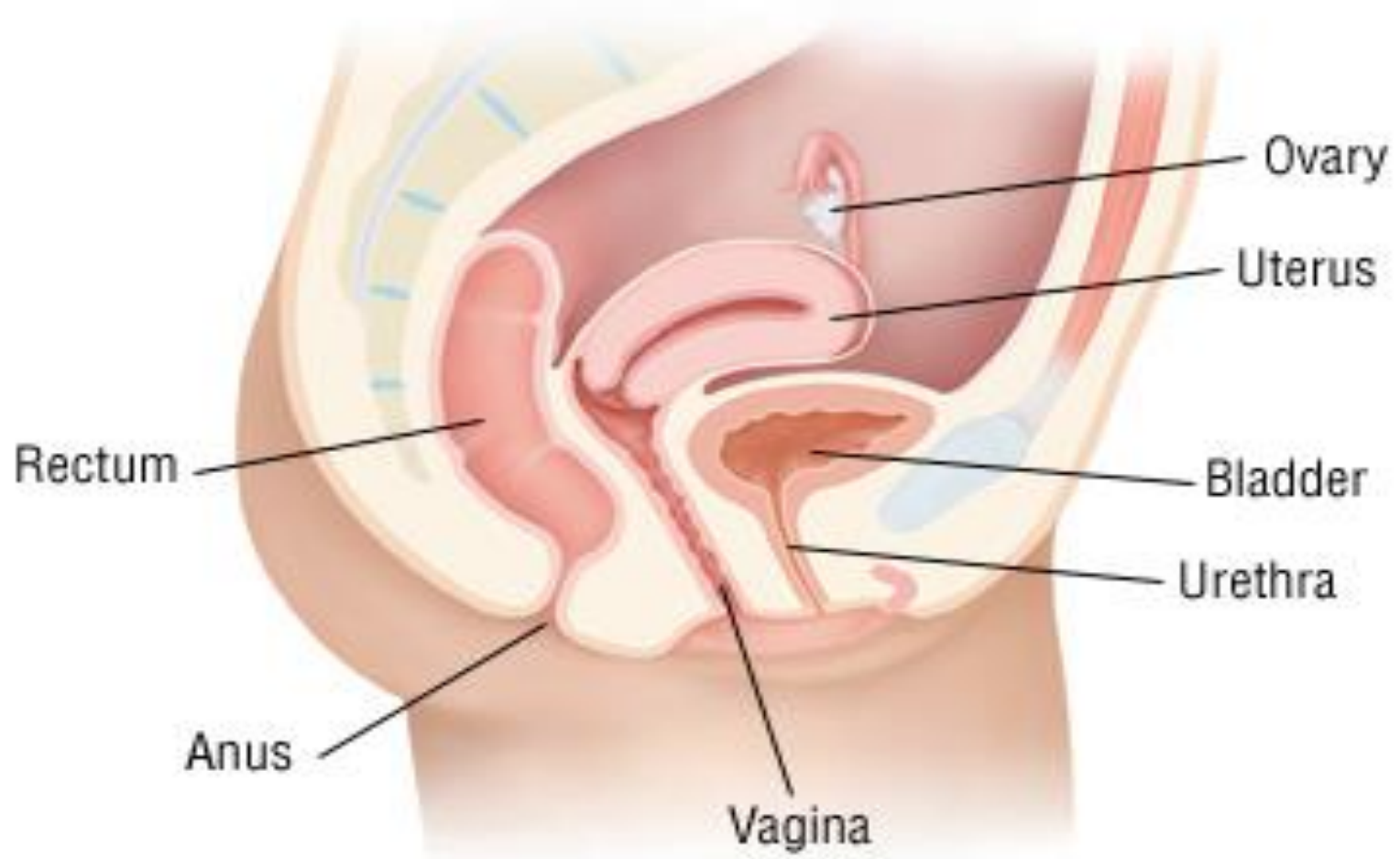
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Learning Objectives

- Anatomy of the Pelvic Region
- Ecosystem of the Vagina
- Vaginal Infections
- Simple UTIs

Pelvic Region





Perineum

- Labia: There are two: Labia Majora and Labia Minora
- Labia Majora: the outer labia that can be seen on a visual exam. It is hyperpigmented and covered with hair.
- Labia Minora: absent of hair. Better known as the sex skin.
- This area is better known as the Vulva

Vagina

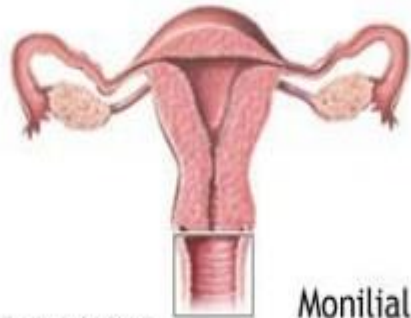
- Vagina: has its own eco-system
- Vagina: Muscular canal → Extends from the cervix to the vulva (average length: 6- 7 cm; posterior Fornix)
- Vaginal Rugae: wrinkles are based on estrogen levels
- Vaginal lubrication: Comes from the Bartholin's Glands, cervix, Skene's Gland, and vaginal wall

VAGINA

- The vagina is an acidic (pH→3.8-4.5) environment
- The only times it is alkaline is 1) during intercourse to support and provide nutrients for sperm and 2) during vaginal infection
- Lactobacilli→ primary type of bacteria in the vagina. Lactobacilli is a type of hydrogen peroxide for the vagina. It keeps the pH between 3.8-4.5. Helps keep the number of undesirable bacteria under control. Ex: E. Coli

Types of Vaginal Infections

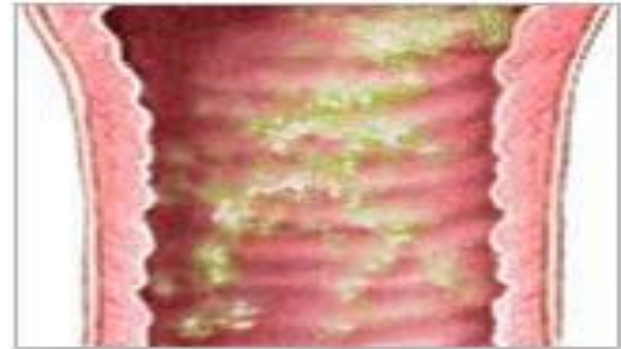
- Bacterial Vaginosis BV = pH > 4.5. Fishy odor, smell is worse with coitus and washing the vagina with soap
- Candida: The pH is not altered by Candida. Itchy, curdy, white discharge
- Trichomoniasis: profuse, foul smelling vaginal discharge, genital redness, Strawberry Cervix, bubbling frothy discharge, burning, and itching. pH > 4.7



Trichomonas vaginitis

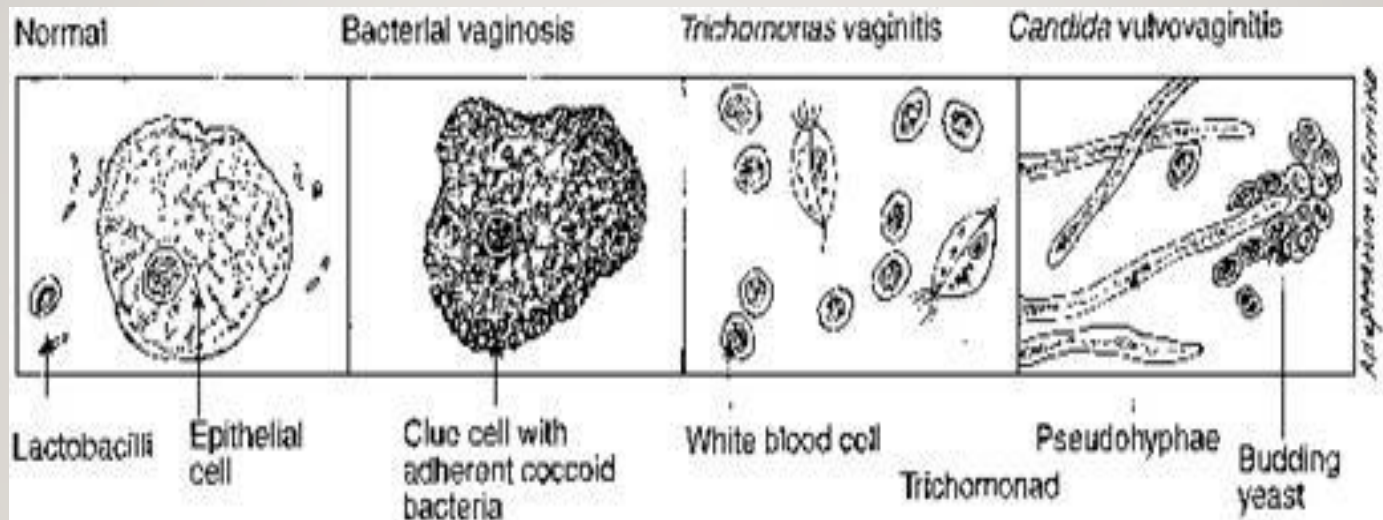


Monilial vaginitis
(vaginal yeast infection)






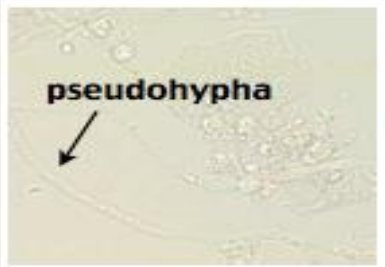
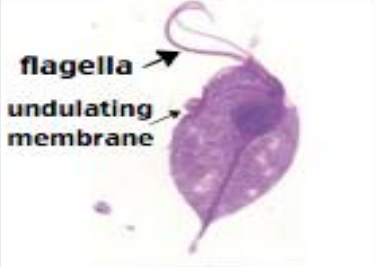
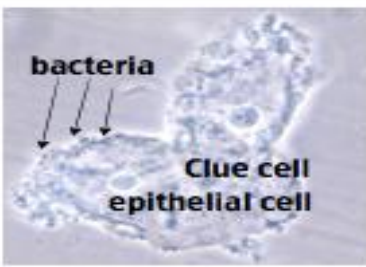
Bacterial Vaginosis

MICROSCOPIC VIEW

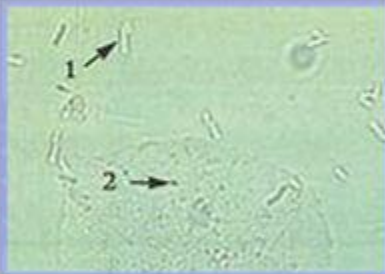
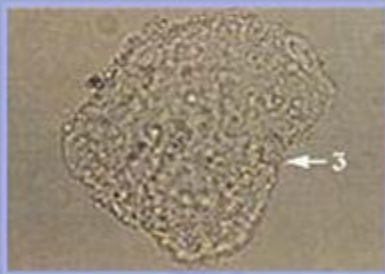
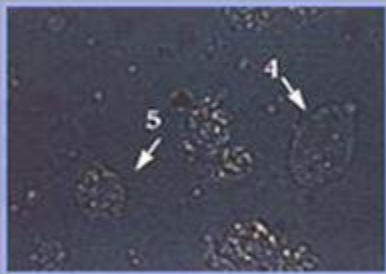
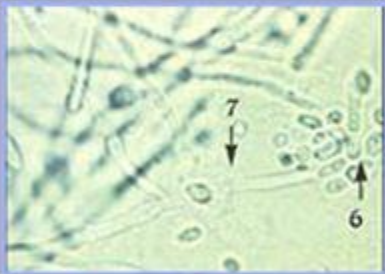


Characteristics	Bacterial Vaginosis	Trichomoniasis	Vaginal Candidiasis
Vaginal Odor	+	+/-	-
Vaginal Discharge	Thin, gray	Green-yellow	White, curdlike
Vulvar irritation	+/-	+	+
Dyspareunia	-	+	+
Vulvar erythema	-	+/-	+/-
Strawberry Cervix	-	+/-	-
Clue cells	+	-	-
Motile protozoa	-	+	-
Pseudohyphae	-	-	+
Whiff test	+	+/-	-
pH	>4.5	>4.5	normal

Vaginal Discharge

	Candidiasis	Trichomoniasis	Bacterial vaginosis
Discharge			
	White	Green/yellow	Gray/white
Color	 <p>thick, curdy, white discharge</p>	 <p>frothy, green/yellow discharge</p>	 <p>thin, white/grey discharge</p>
pH	< 4.5	> 5	> 4.5
Amine odor w/ KOH	Negative	Positive	Positive
Wet mount	<ul style="list-style-type: none"> • WBC • Spores • Pseudohyphae 	<ul style="list-style-type: none"> • WBC • Motile trichomonads 	<ul style="list-style-type: none"> • Few WBCs • Clue cells
	 <p>pseudohypha</p>	 <p>flagella undulating membrane</p>	 <p>bacteria Clue cell epithelial cell</p>

Differential Diagnosis of Vaginal Infections:
Source: APGO Educational Series in Women's Health Issues

Diagnostic Criteria	Syndrome			
	Normal	Bacterial Vaginosis	<i>Trichomonas Vaginitis</i>	<i>Candida Vulvovaginitis</i>
Vaginal pH	3.8-4.2	>4.5	>4.5	≤4.5 (usually)
Discharge	White, clear, flocculent	Thin, homogeneous, white, gray, adherent, often increased	Yellow-green, frothy, adherent, increased	White, curdy, 'cottage cheese-like', sometimes increased
Amine odor (KOH) whiff test	Absent	Present (fishy)	May be present (fishy)	Absent
Main patient complaints	None	Discharge, bad odor (possibly worse after intercourse), possible itching	Frothy discharge, bad odor, vulvar pruritus, dysuria	Itching/burning, discharge
Microscopic				
	Lactobacilli, epithelial cells	Clue cells with adherent coccoid bacteria, no WBCs	Trichomonads, WBCs > 10/hpf	Budding yeast, hyphae, pseudohyphae (w/KOH prep)
	1. Lactobacilli 2. Epithelial	3. Clue Cell	4. Trichomonad 5. White blood cell	6. Budding yeast 7. Pseudohyphae

Basis of laboratory diagnosis	Bacterial vaginosis	Vulvovaginal candidiasis	Trichomoniasis
Vaginal pH (normal = <4.5)	Elevated (>4.5)	Normal	Elevated (>4.5)
Microscopic examination of wet-mount and KOH preparations of vaginal discharge	"Clue cells" (vaginal epithelial cells coated with coccobacilli) Few lactobacilli Mobiluncus species	Pseudohyphae, budding yeast cells	Motile trichomonads
"Whiff" test (normal = no odor)	Positive	Negative	Can be positive
Additional tests	Amsel's criteria (three of four criteria must be met). Criteria of Nugent for Gram stain.	KOH microscopy Gram stain Culture	DNA probe tests: sensitivity 90%, specificity 99.8% Culture: sensitivity 98% , specificity 100%



Vaginitis Differentiation

	Normal	Trichomoniasis	Candidiasis	Bacterial Vaginosis
Symptom presentation		Itch, discharge, 50% asymptomatic	Itch, discomfort, dysuria, thick discharge	Odor, discharge, itch
Vaginal discharge	Clear to white	Frothy, gray or yellow-green; malodorous	Thick, clumpy, white "cottage cheese"	Homogenous, adherent, thin, milky white; malodorous "foul fishy"
Clinical findings		Cervical petechiae "strawberry cervix"	Inflammation and erythema	
Vaginal pH	3.8 - 4.2	> 4.5	Usually \leq 4.5	> 4.5
KOH "whiff" test	Negative	Often positive	Negative	Positive
NaCl wet mount	Lacto-bacilli	Motile flagellated protozoa, many WBCs	Few WBCs	Clue cells (\geq 20%), no/few WBCs
KOH wet mount			Pseudohyphae or spores if non- <i>albicans</i> species	9

CDC Recommended Treatment of Vaginitis

Bacterial vaginosis

- Metronidazole (Flagyl) 500 mg orally twice daily for seven days
- Metronidazole gel (Metrogel) One full applicator (5 g) intravaginally once daily for five days
- Clindamycin 2% cream One full applicator (5 g) intravaginally at bedtime for seven days

Pregnancy (do not give Metronidazole to Breastfeeding mothers)

- Metronidazole 500 mg orally twice daily for seven days
- Metronidazole 250 mg orally three times daily for seven days
- Clindamycin 300 mg orally twice daily for seven days



CDC Recommended Treatment of Vaginitis

Trichomoniasis

Recommended regimen

- Metronidazole 2 g orally in a single dose
- Tinidazole 2 g orally in a single dose

Alternative regimen

- Metronidazole 500 mg orally twice daily for seven days

Pregnancy (do not give Metronidazole to Breastfeeding mothers)

- Metronidazole 2 g orally in a single dose



VULVOVAGINAL CANDIDIASIS, UNCOMPLICATED

CDC RECOMMENDED TREATMENT OF VAGINITIS

- **Butoconazole 2% cream (Gynazole-1)** 5 g intravaginally once daily for three days
- **Clotrimazole 1% cream** 5 g intravaginally once daily for seven to 14 days
- **Clotrimazole 2% cream** 5 g intravaginally once daily for three days
- **Miconazole 2% cream** 5 g intravaginally once daily for seven days
- **Miconazole 4% cream** 5 g intravaginally once daily for three days

VULVOVAGINAL CANDIDIASIS, UNCOMPLICATED

CDC RECOMMENDED TREATMENT OF VAGINITIS

- **Terconazole 0.4% cream** 5 g intravaginally once daily for seven days
- **Terconazole 0.8% cream** 5 g intravaginally once daily for three days
- **Fluconazole (Diflucan)** 150 mg orally in a single dose

VULVOVAGINAL CANDIDIASIS, UNCOMPLICATED

CDC RECOMMENDED TREATMENT OF VAGINITIS

- **Pregnancy**
- Any topical azole: Intravaginally once daily for seven days
- Do not give Diflucan ?

VULVOVAGINAL CANDIDIASIS, COMPLICATED

- **Recurrent**
- Initial regimen: Any topical agent -Seven to 14 days
- **Fluconazole** 100, 150, or 200 mg orally once daily every third day for three doses
- **Maintenance regimen**
- **Fluconazole** 100, 150, or 200 mg orally once weekly for six months

UTI, WOMEN

- E.coli is the most common cause
- Costovertebral Angle tenderness with fever suggests pyelonephritis
- Dx usually by S/Sx: dysuria, urinary frequency, urinary urgency, hematuria, may have suprapubic pain
- Study: urine dip stick, urine culture

UTI, WOMEN

- Positive Nitrite and Leukocytes
- But if dipstick is negative and symptoms suggest UTI, the probability of infections is relatively high –
- Send for a culture and sensitive test

TREATMENT FOR UTI

- Nitrofurantoin (Macrobid) 100 mg 1 tab po BID x 7 days (safe in pregnancy until 3rd trimester)
- Bactrim DS : 1 tab po BID x 3 days, remember high resistance (do not give in pregnancy)
- Cipro 250 mg 1 tab po BID x 3 days =do not give in pregnancy
- Augmentin 500 mg 1 tab po BID x 3 days
- Keflex 500 mg 1 tab po q6-12 hrs x 7 days =safe in pregnancy

Conclusion

- It has its own Ecosystem → self-cleaning
- The Vagina is an interesting organ
- UTIs are simple
- I hope you enjoyed this presentation