Flow Chart to Aid Vaginal Discharge Decision-Making Process

Abbreviations:
BV – Bacterial Vaginosis
KOH – Potassium Hydroxide
PID – Pelvic Inflammatory Disease
STI – Sexually Transmitted Infection

History:
- Last Period
- STI Risk Factors
- Fever, Chills
- Painful Urination
- Abdominal Bleeding
- Abdominal/Lower Pelvic Pain
- Current Contraception Use

Color Key:
- General flow chart pathway
- Decision Factor
- Treatment Plan
- Additional Considerations

Physical Exam:
- Speculum Exam
- Obtain Wet Prep and KOH
- Obtain Gonorrhea/Chlamydia Swab
- Check for Cervical Motion Tenderness
- Examine Cervix: Purulent Discharge? Bleeds Easily?

Additional Symptoms:
- Fever, Chills
- Persistent Nausea and Vomiting
- Cervical Motion Tenderness
- Presumed PID

Laboratory evaluation available?

* If patient cannot tolerate oral medication, they will need to be admitted to the hospital

Yes

No

Laboratory Evaluation:
- STI Screening (including Gonorrhea, Chlamydia, Herpes, Syphilis, Trichomonas)
- KOH
- Wet Prep

If No Laboratory Testing Available:
- Clumpy Yellow Discharge – Treat as Yeast Infection (Candida)
- Fishy Odor – Treat for BV
- Foamy White Discharge with Odor – Treat for Trichomonas
- Cervical Motion Tenderness or STI Exposure: Treat for presumed Gonorrhea or Chlamydia

*Consider follow-up lab for HIV Testing if High Risk Group

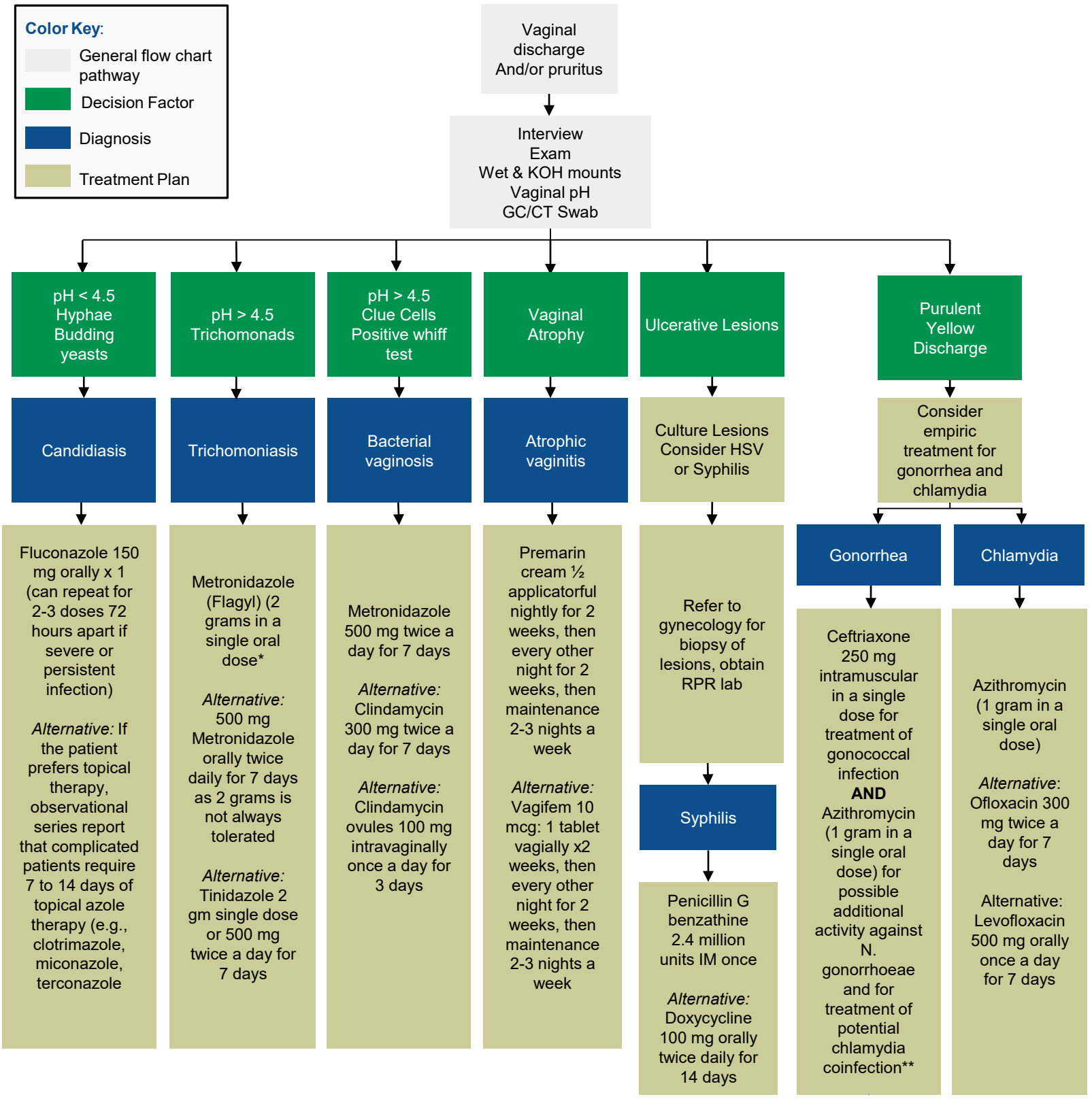
Negative Lab Result

- Counsel on normal vaginal discharge symptoms
- Screen for allergies (soaps, lotions, lubricants, prolonged tampon use, etc.)

Positive Lab Result

Treat Infection Accordingly

Flow Chart to Aid Vaginal Discharge
Decision-Making Process



*DO NOT DRINK ALCHOHOL WHILE TAKING FLAGYL: Abdominal cramps, nausea, vomiting, headaches, and flushing have been reported with oral and injectable metronidazole and concomitant alcohol consumption (disulfiram-like reactions)

**Dual therapy is related to concerns regarding the early emergence of cephalosporin resistance first-line agents

Flow Chart to Aid Vaginal Discharge Decision-Making Process

Women of Reproductive Age

Color Key:
- General flow chart pathway
- Decision Factor
- Diagnosis
- Treatment Plan

Things to Consider in Clinical and Sexual History:

- Reasons for presentations and concerns
- Characteristics of the discharge (changes, odor, onset, duration, color, and consistency)
- Associated symptoms (itch, superficial dyspareunia, dysuria)
- Symptoms indicative of upper reproductive tract infection (abdominal pain, deep dyspareunia, abnormal vaginal bleeding, dysuria, pyrexia)
- Risk of STIs (aged <25 years, new sexual partner, or more than one sexual partner in the last year)
- Contraceptive use, pregnancy, postpartum, post-abortion
- Concurrent medications, previous treatments used (prescription, over-the-counter or home remedies)
- Medical Conditions (e.g. diabetes, immunocompromised state)
- Non-infective causes of discharge (foreign body, cervical ectopy, polyps, genital tract malignancy, dermatological disease)

- Not sexually active or low risk of STI **and**
- No symptoms indicative of upper reproductive tract infection

- Higher risk of STI (aged <25 years, new sexual partner or more than one sexual partner in last year) or
- Upper reproductive tract symptoms or
- Women requesting investigations/STI test or
- Pregnancy, postpartum, post-abortion, post-instrumentation
- Recurrent infection
- Failed treatment

Accepts offer of examination

Declines offer of examination

Accepts offer of examination

Declines offer of examination

Syndromic treatment Based on clinical and sexual history

Empirical treatment Based on pH, clinical and sexual history. Can be given before results of any laboratory testing

Inconclusive assessment

Awaiting results

- Examination (including bimanual if patient has symptoms of upper reproductive tract infection)
- Vaginal pH
- Endocervical swab(s) for gonorrhea and chlamydia
- Offer blood tests for HIV and syphilis
- Consider high vaginal swab

Vaginal swab for CT +/- NG and syndromic treatment

pH ≤ 4.5

pH > 4.5

White discharge without odor with itch ***Candida*** – treat with antifungal

Foul smelling discharge without an itch ***BV*** – treat with metronidazole (first line)

Recurrent infection, failed treatment, suspicion of STI (e.g. vaginitis*)

Abbreviations:
BV – Bacterial Vaginosis
CT – Chlamydia trachomatis
NG – *Neisseria gonorrhea*
STI – Sexually Transmitted Infection
VS –- vulvovaginal swab

*Examination should be completed to exclude sexually transmitted infection, malignancy or foreign body

Table to Aid Vaginal Discharge Decision-Making Process

Infection	Sign/Symptom	Likelihood Ratio*
Candidasis	Pruritus absent	0.18 to 0.79
	Pruritus as chief complaint	3.3
	Inflammatory signs present	1.4 to 8.4
	Curd-like discharge with pruritus	150
	Yeast not seen on KOH wet prep	0.51 to 0.66
Bacterial vaginosis	No complaint of odor	0.07
	Complaint of malodorous discharge	1.6 to 3.2
Trichomoniasis	Inflammatory signs present	6.4
	Trichomonads on saline wet mount	51 to 310
	Trichomonads absent on saline wet mount	0.34 to 0.51

KOH: Potassium Hydroxide

- Confidence intervals are wide, but significant.
- *Adapated from Anderson, MR, Klink, K, Cohrrsen, A. JAMA 2004; 291:1368*

Table to Aid Vaginal Discharge Decision-Making Process

Parameter	Normal Findings	Vulvovaginal Candidiasis	Bacterial Vaginosis	Trichomoniasis
Symptoms	None or mild, transient	Pruritus, soreness, dyspareunia	Malodorous discharge, no dyspareunia	Malodorous discharge, burning, postcoital bleeding, dyspareunia, dysuria
Signs	Normal vaginal discharge consists of 1 to 4 mL fluid (per 24 hours), which is white or transparent, thin or thick, and mostly odorless	Vulvar erythema and/or edema. Discharge may be white and clumpy and may or may not adhere to vagina.	Off-white/gray thin discharge that coats the vagina	Thin green-yellow discharge, vulvovaginal erythema
Vaginal pH	4.0 to 4.5	4.0 to 4.5	>4.5	5 to 6.0
Amine Test	Negative	Negative	Positive (in 70 to 80% of patients)	Often positive
Saline Microscopy	PMN:EC ratio <1; rods dominate; squamous +++	PMN:EC ratio <1; rods dominate; squames +++; pseudohyphae (present in about 40% of patients): budding yeast for nonalbicans Candida	PMN:EC <1; loss of rods; increased coccobacilli; clue cells comprise at least 20% of epithelial cells (present in >90% of patients)	PMN ++++; mixed flora; motile trichomonads (present in about 60% of patients)
10% Potassium Hydroxide Microscopy	Negative	Pseudohyphae (in about 70% of patients)	Negative	Negative
Other Tests	-	If microscopy nondiagnostic: • Culture • DNA hybridization probe (e.g., Affirm VP III)	Quantitative Gram stain (e.g., Nugent criteria, Hay/Ison criteria) DNA hybridization probe (e.g., Affirm III) Culture of no value	If microscopy nondiagostic: • Culture (e.g., InPouch TV culture system) • Rapid antigen test (e.g., OSOM Trichomonas Rapid Test) • Nucleic acid amplification (e.g. APTIMA Trichomonas vaginalis test) • DNA Hybridization probe (e.g, Affirm VPIII)
Differential Diagnosis	Physiologic leukorrhea	Constant irritant of allergic vulvar dermatitis, chemical irritation, focal vulvitis (vulvodynia)	Elevated pH in trichomoniasis, atrophic vaginitis, and desquamative inflammatory vaginitis	Purulent vaginitis, desquamative inflammatory vaginitis, atrophic vaginitis, erosive lichen planus

Additional Physical Exam Considerations to Aid Vaginal Discharge Decision-Making Process

Physical examination:

Vulva

- Normal vulva are consistent with BV or leukorrhea.
- Erythema, edema, or fissures suggest candidiasis, trichomoniasis, herpes or dermatitis.
- Atrophic changes are caused by hypoestrogenemia and suggest the possibility of atrophic vaginitis.
- Pain with application of pressure from a cotton swab ("Q-tip test") on the labia or at the vaginal introitus may indicate an inflammatory process (candidiasis, dermatosis) or vulvodynia (ie, vulvar pain of unclear etiology).

The vagina is examined for the following lesions:

- A foreign body (e.g., retained tampon or condom) is easily detected and is often associated with vaginal discharge, intermittent bleeding or spotting, and/or an unpleasant odor due to inflammation and secondary infection. Removal of the foreign body is generally adequate treatment. Antibiotics are rarely indicated.
- Vaginal warts.
- Granulation tissue or surgical site infection can cause vaginal discharge or bleeding after hysterectomy or after childbirth.
- Necrotic or inflammatory changes associated with malignancy in the lower or upper genital tract can result in vaginal discharge; spotting is more common in this setting than in infectious vaginitis.
- The presence of multifocal rounded macular erythematous lesions (like a spotted rash or bruise), purulent discharge, and tenderness suggests erosive vulvovaginitis, which can be caused by trichomoniasis or one of several noninfectious inflammatory etiologies.

Vaginal discharge

The characteristics of the vaginal discharge may suggest the type of infection, if present (slides 4&5). Trichomoniasis is classically associated with a greenish-yellow purulent discharge; candidiasis with a thick, white, adherent, "cottage cheese-like" discharge; and BV with a thin, homogeneous, "fishy smelling" gray discharge. Inflammation and/or necrosis related to malignancy of the lower or upper genital tract can result in watery, mucoid, purulent, and/or bloody vaginal discharge.

Vesicovaginal and rectovaginal fistulas are rare, can be hard to detect, and are a source of chronic vaginal discharge. At-risk patients include those who are postpartum, posthysterectomy, postsurgery for prolapse, or have a history of inflammatory bowel disease or radiation therapy to the pelvis.

Cervix

- Cervical inflammation with a normal vagina is suggestive of cervicitis rather than vaginitis. The cervix in women with cervicitis is usually erythematous and friable, with a mucopurulent discharge
- Cervical erythema in cervicitis should be distinguished from ectropion, which represents the normal physiologic presence of endocervical glandular tissue on the exocervix. Ectropion is more common in women taking estrogen-progestin contraceptives and during pregnancy. Ectropion may increase the volume of normal vaginal discharge.

Bimanual examination is performed to assess for tenderness and/or abnormal anatomy.

- Women with vaginitis who also have pelvic or cervical motion tenderness are further evaluated for pelvic inflammatory disease.
- Adnexal masses could represent a cyst or malignancy. (See "Approach to the patient with an adnexal mass".)