Recurrent Vaginal Symptoms and Dysbiosis:

Presented by Optibac
Trusted friendly bacteria

Understanding BV, Aerobic Vaginitis, Thrush and the Role of Lactobacilli in Vaginal Health



In partnership with novonesis

Presentation reviewed by an expert Medicine Microbiologist and PhD – Dr Kate Steed



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Why Health Professionals Trust Us

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Science-led

- UK's most researched probiotic brand
- 850+ scientific papers
- Clinically proven strains
- 20+ years of setting the gold standard science

Quality & Transparency

- World-leading lab partnerships
- Full strain traceability
- Natural ingredients

Targeted Efficacy

- Strain-specific results
- Aligned with WHO, IPA, WGO
- NHS recommendations

Most Trusted Brand

- Most trusted and recommended in UK and ROI
- 7800+ Trustpilot reviews ★4.8
- Queen's & King's Awards

Agenda

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1 The vaginal microbiota and the role of Lactobacilli

- The intimate microbiota
- Lactobacilli across different life stages
- Drivers and consequences of vaginal dysbiosis
- Community State Types (CSTs) and ethnicity

2 Understanding common vaginal infections

- Bacterial vaginosis (BV)
- Aerobic vaginitis (AV)
- Vulvovaginal candidiasis (VVC/thrush)
- Key pathogens, pathophysiology and recurrence
- Differences between BV, AV and VVC

3 The role of probiotics in vaginal dysbiosis

- Supporting the vaginal microbiome and Lactobacilli
- *L. rhamnosus* GR-1® and *L. reuteri* RC-14®
- Mechanisms of action
- Biofilms and pathogen inhibition

4 Clinical evidence and practical application

- Clinical evidence in BV
- Probiotics alongside antibiotic treatment
- Clinical evidence in VVC/thrush
- Practical recommendations for Optibac For Women



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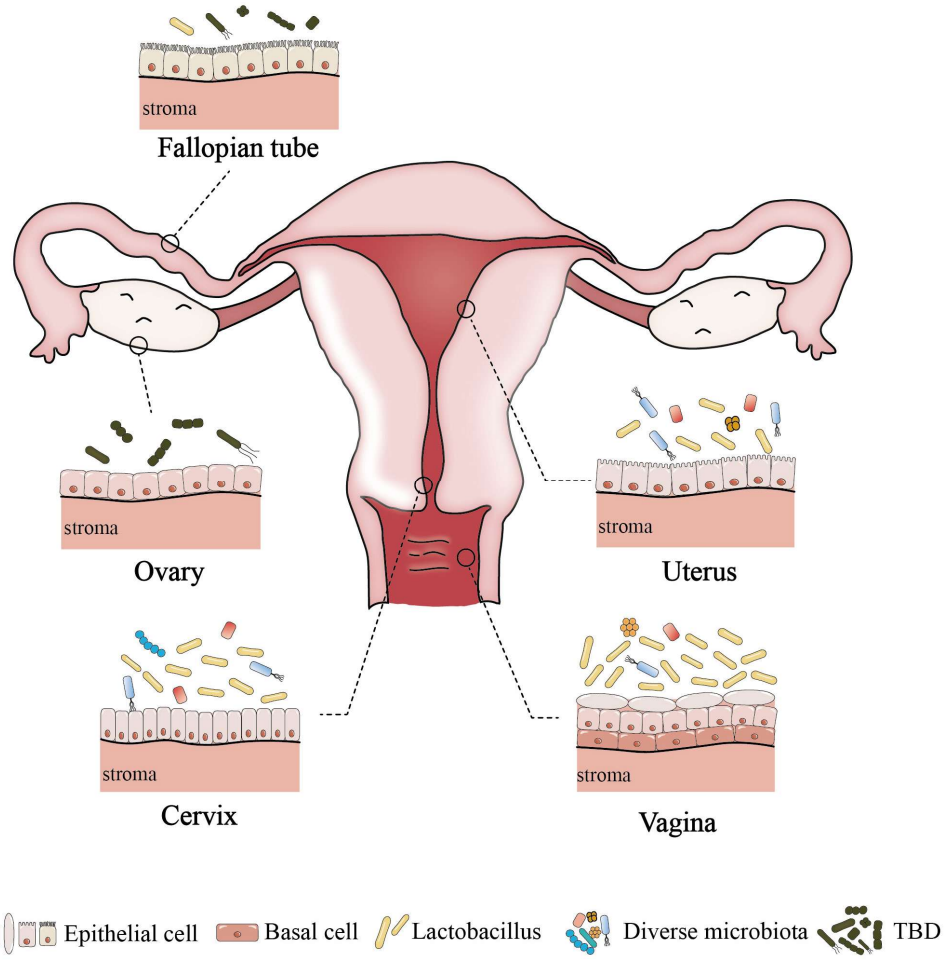
Vaginal Microbiota



Reproductive Microbiota

1. Microbes have been found in the intimate microbiome
2. Distinct from one another but share similarities with the vaginal microbiome
3. **Vaginal microbiome is the 'hub'** – dysbiosis may ripple into other reproductive microbiomes
4. Biological arguments for the role of the ovarian, fallopian and uterine microbiotas

✓ **Lactobacilli present in all**



Gao H *et al.*, (2024)

Vaginal Microbiota: Role of Lactobacilli

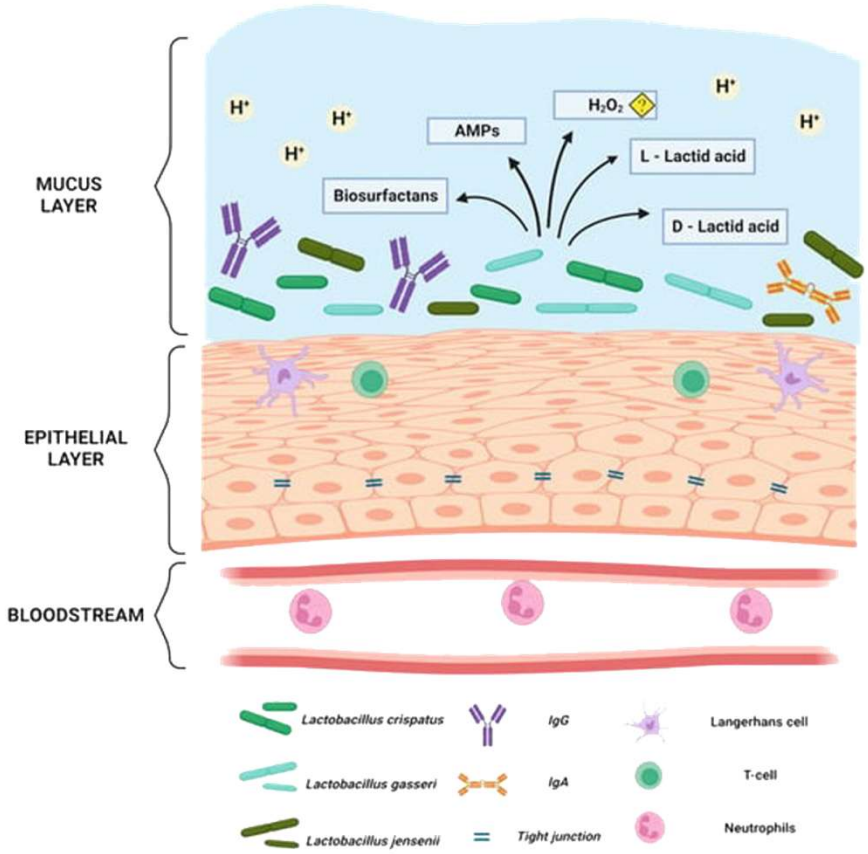
>90% Healthy vaginal microbiota is dominated by *Lactobacillus* spp.
Carter KA et al., 2023

Protective functions of *Lactobacillus* spp.:

- Maintains an acidic vaginal pH (produces lactic acid & H_2O_2).
- Produces antimicrobial peptides (bacteriocins).
- Strengthens the mucosal barrier and immune responses, preventing pathogen entry and chronic inflammation.

- The abundance of Lactobacilli varies throughout a woman's life and can be influenced by lifestyle factors.
- Numerous studies show low Lactobacilli levels are associated with poorer health outcomes in women
  (Seña, A. C. et al., 2021; Ravel et al., 2021; NICE, 2023).





Pendharkar, S *et al.,* (2023)

Lactobacilli Levels Across the Life Stages

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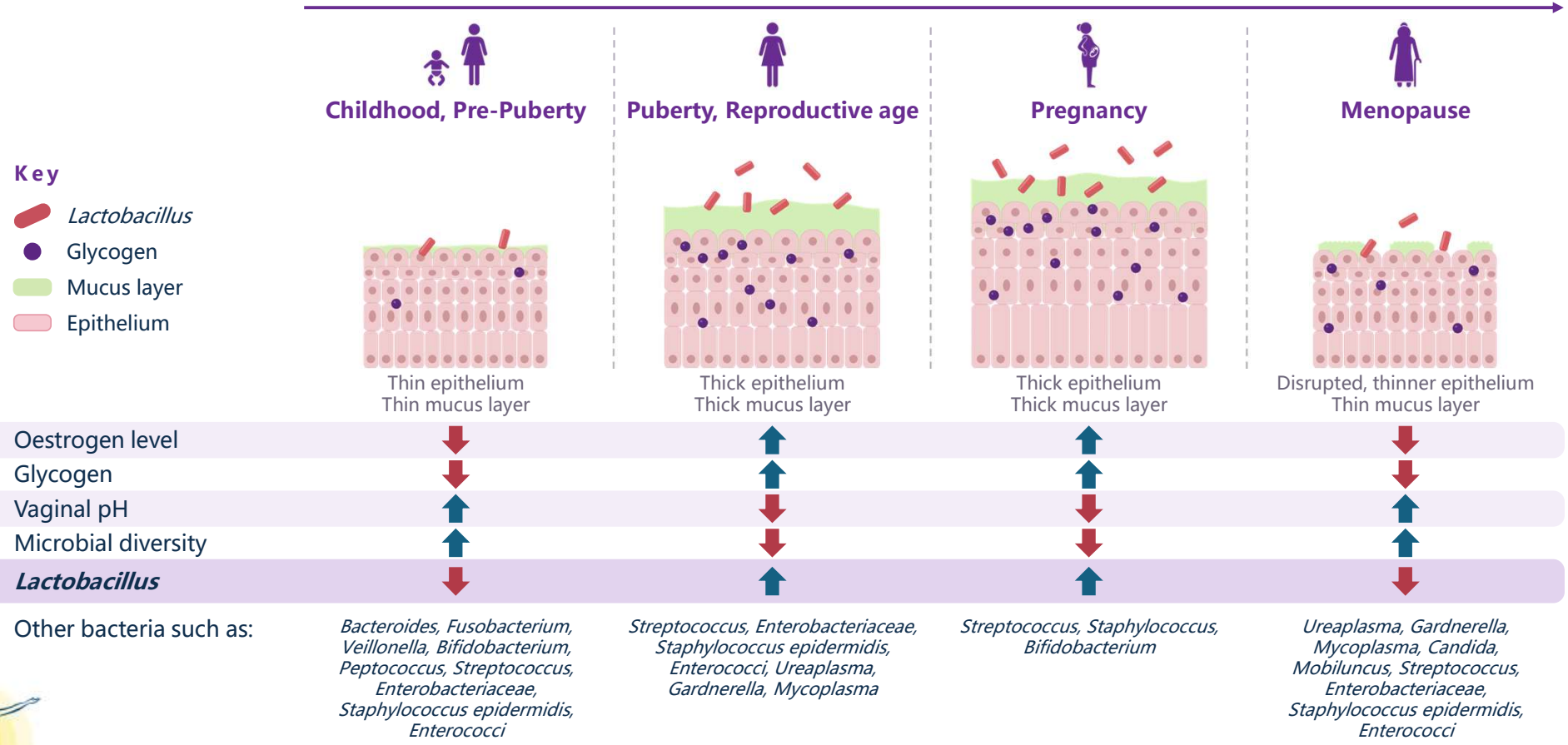

Adapted from Heravi F*et al.,* (2024)

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What Drives Vaginal Dysbiosis?

Hygiene
- Soaps
- Douching
- Synthetic underwear
- Vaginal cleaning products
- Perfumed sanitary products

Lifestyle
- Diet
- Stress
- Smoking
- Sexual activity

Hormonal
- Age
- Pregnancy
- Menopause
- Menstrual cycle

Medication
- Antibiotics
- Antifungals
- Contraceptives

Ethnicity

Vaginal dysbiosis

(reduced Lactobacilli)

Increased risk of
- **Thrush**
- **Cystitis**
- **BV**
- Fertility complications
- Sexually transmitted diseases
- Miscarriage
- Preterm labour

Many everyday factors reduce resident Lactobacilli and cause dysbiosis,
which in turn raises the risk of infection and wider reproductive health problems.



Impact of Vaginal Dysbiosis & Low Lactobacilli on Intimate Health

INFECTIONS

- **Bacterial Vaginosis (BV)** is the most common condition linked to vaginal dysbiosis and low Lactobacilli *(Bradshaw et al., 2025).*
- **Vulvovaginal Candidiasis (Thrush)** often occurs due to an imbalance in vaginal microbiota *(Borrego-Ruiz & Borrego, 2025).*
- **Urinary Tract Infections (UTIs)** are more frequent in women with disrupted vaginal microbiota and in pre and postmenopausal women *(Liu et al., 2025).*
- **Sexually Transmitted Infections (STIs)** risk increases significantly with low Lactobacilli, including HPV and chlamydia *(Machado et al., 2025).*
- **Pelvic Inflammatory Disease (PID)** is associated with persistent dysbiosis *(Bradshaw et al., 2025).*

18–20%

of women undergoing IVF have vaginal dysbiosis and low Lactobacilli, which correlates with early pregnancy loss and lower clinical pregnancy rates

Haahr et al., 2016; Skafte-Holm et al., 2021; Celicanin et al., 2024

FERTILITY & PREGNANCY

- **Fertility Issues,** including implantation failure and reduced IVF success, are linked to vaginal dysbiosis *(Skafte-Holm et al., 2021).*
- **Pregnancy Complications,** such as miscarriage and preterm birth, are strongly associated with low Lactobacilli *(Grewal et al., 2022).*



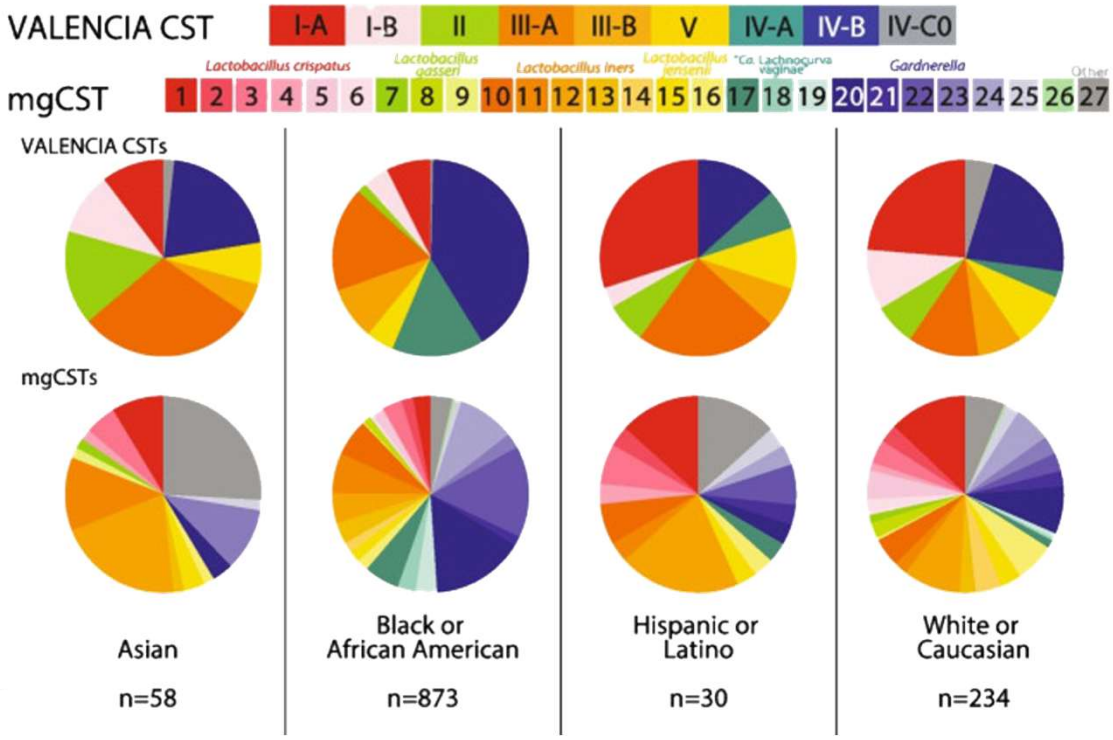
Vaginal microbiota clusters & ethnicity

The vaginal microbiota can be classified into 5 different clusters (community state types) based on Lactobacilli abundance and composition.

- **CST I- *L. crispatus* dominant**
- **CST II- *L. gasseri* dominant**
- **CST III- *L. iners* dominant**
- **CST IV- None Lactobacilli dominant**

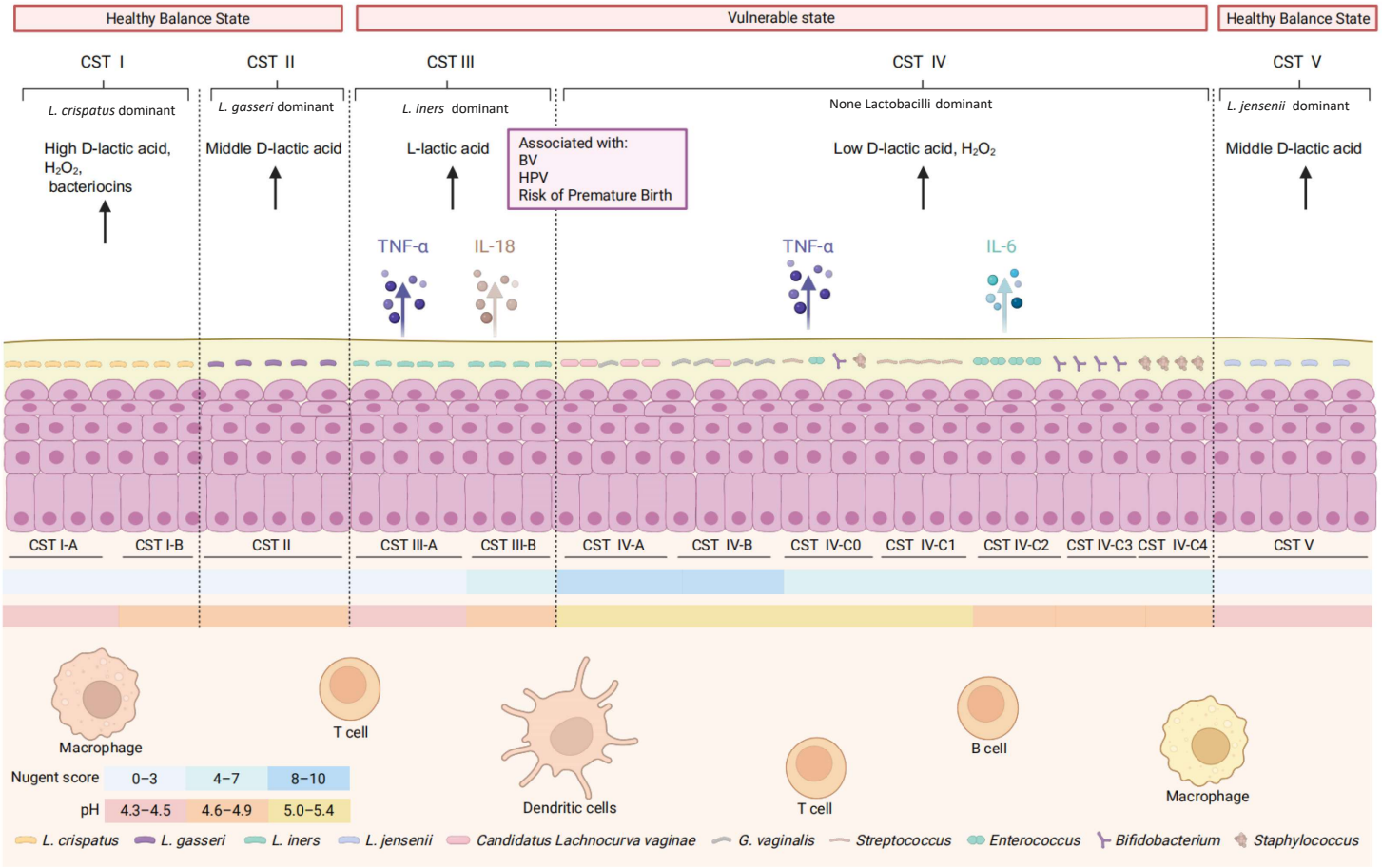
  (least protective)
- **Cluster V- *L. jensenii* dominant**

There are differences in vaginal microbiota between ethnic groups.



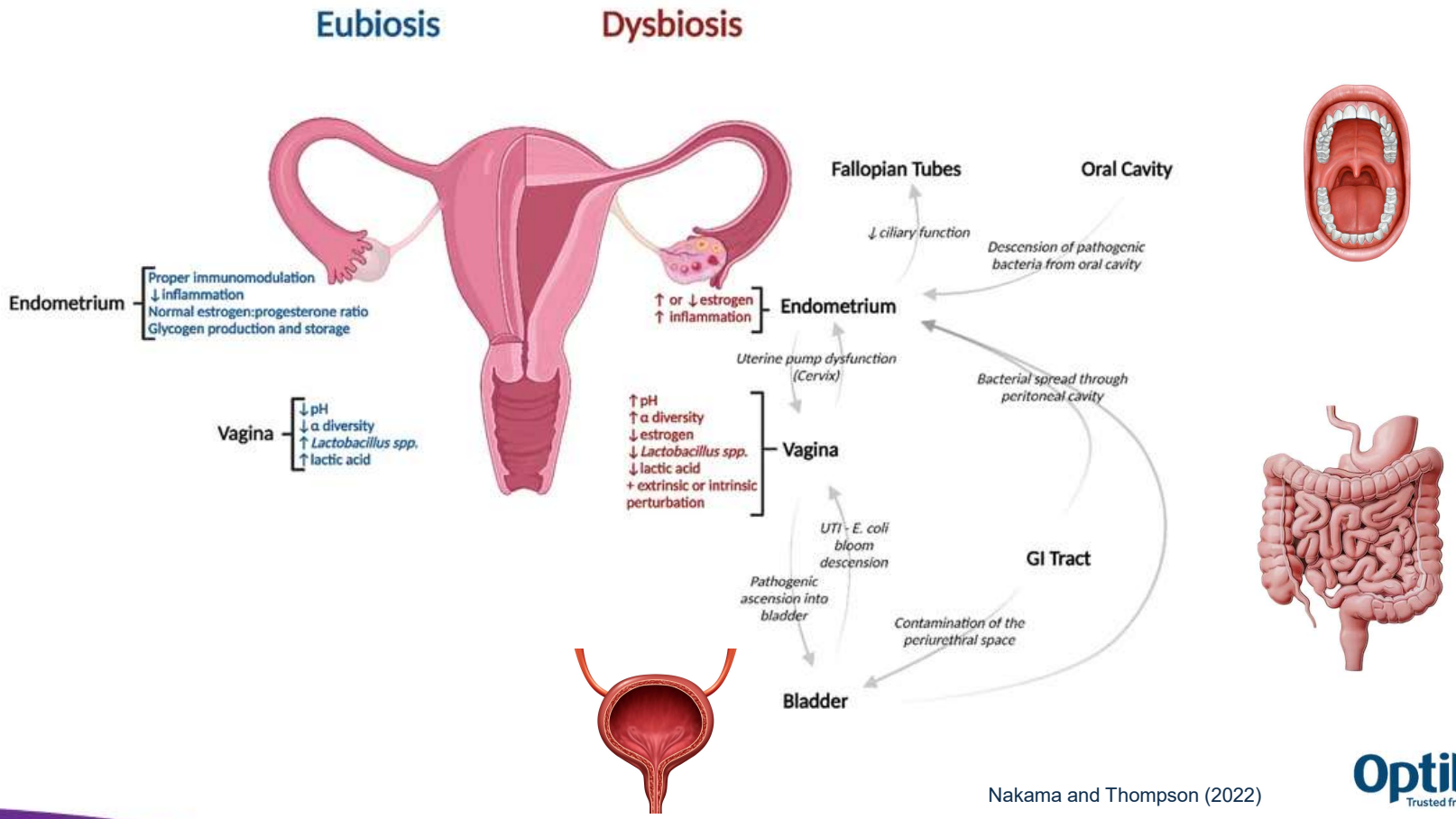
Holm J *et al.*, (2023)

Vaginal microbiome CST and their associations with health and disease



Zhang, Y *et al.,* (2026)

Interconnected Dysbiosis Across the Female Urogenital Tract

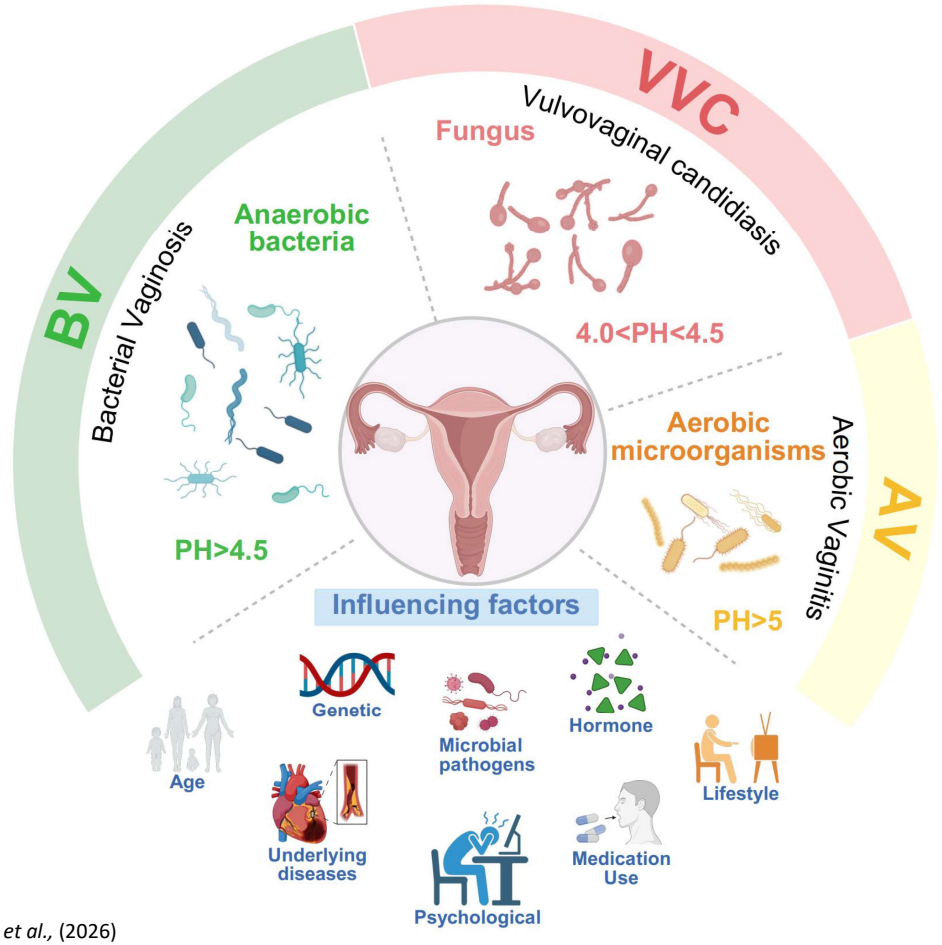


Nakama and Thompson (2022)

The Aetiology of Vaginal Infections



Microbial Characteristics and Influencing Factors in Infectious Vaginal Disease



Zhang, Y *et al.,* (2026)

Vaginal microbiome in BV

BV is characterised by an **overgrowth of anaerobic organisms** and a **loss of Lactobacilli**. The vaginal pH increases to greater than 4.5

NICE, 2023

OCCURS IN

29%

of women

WHO, 2023

CURRENT TREATMENT

up to

85%

cure rate after 1 month with antibiotics (metronidazole or clindamycin)

Coudray M, 2020

HIGH RECURRENCE RATE

50%

of cases recur within 6 months

70%

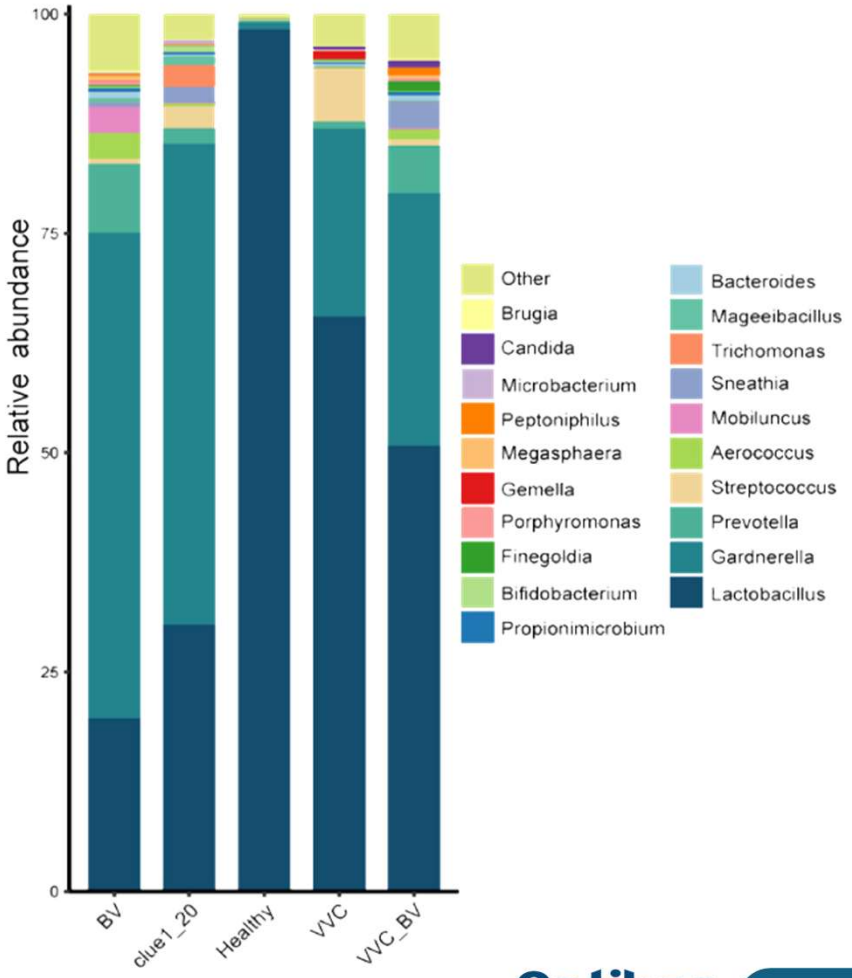
within 12 months

Vodstril L, 2021; Coudray M, 2020

Typically diagnosed through Nugent or Amsel scoring:

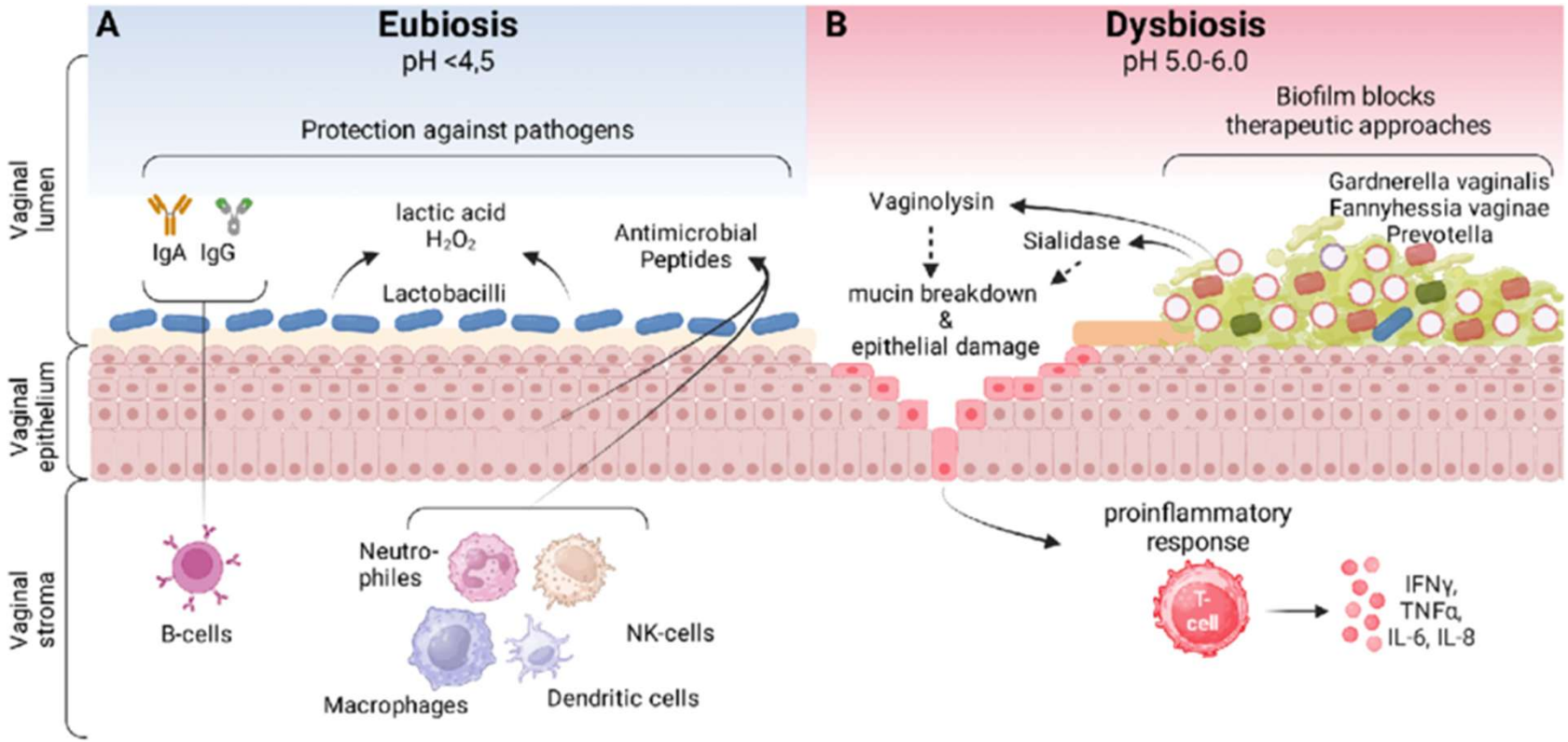
Microbial dysbiosis | pH >4.5 | Odour | Discharge | Clue cells





Song J *et al.*, (2024)

BV pathophysiology



Vomstein Kilian *et al.,* (2024)

Bacterial vaginosis (BV) risk factors

- Pregnancy
- Soaps & perfumed products
- Douching
- Age
- Poor gut health
- Stress
- Antibiotics
- Sexual activity
- Tight clothing and synthetic underwear
- PCOS & Endometriosis?



Impact of recurrent BV

BV increases the risk of developing several other health conditions, including:

1

4×

Sexually transmitted infections

4-fold increased risk

WHO 2023; Marlowe E M et al. 2026

2

2.7×

Pelvic inflammatory disease (PID)

2.7-fold increased risk

Ravel et al., 2021; WHO, 2024

3

3.3×

Infertility

Tubal infertility: 3.3 times more likely

Increases the risk of **early pregnancy loss** and **lower clinical pregnancy rate**

Ravel et al., 2021

4

Urinary tract infections (UTIs)

Increase the likelihood of **recurrent UTIs** (when conventional uro-pathogens are not detected)

Yoo JJ et al., 2022

5

2–7×

Pregnancy complications

Pre-term birth: 2–7 fold

Increases the risk of low birth weight, NICU stay, premature rupture of membranes (PROM) and postpartum endometritis

Mohanty, T., et al., 2023



Gardnerella spp.

One of the most causative agents in BV

PREVALENCE

up to **95%**

of women with BV, although colonisation colonisation does not always lead to BV *(Munzy* BV *(Munzy et al., 2019).*

G. vaginalis is the most common species species

VIRULENCE FACTORS

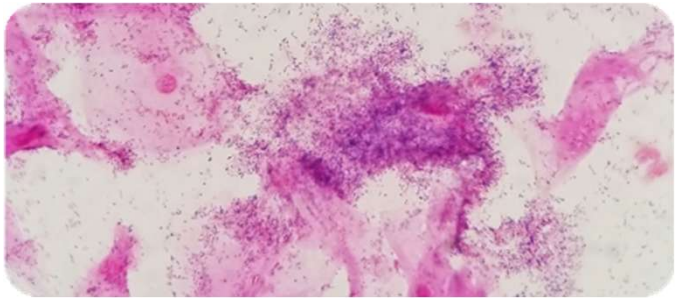
Production of bacteriocins, sialidase and vaginal haemolysins plus **biofilm formation**

ROLE IN POOR HEALTH OUTCOMES

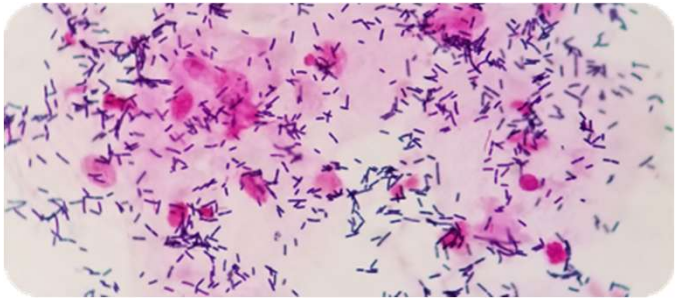
- May reduce sperm motility *(Gutzeit O et al., 2023)*
- *G. vaginalis* infection stimulates systemic inflammation *(Shin et al., 2025)*
- Increased risk of HPV and STIs *(Gao H et al., 2024)*
- Repeat pregnancy loss *(Peuranpaa et al., 2022)* and repeat implantation failure *(Gao X et al., 2024)*
- Increased in over 50% of women with PCOS *(Chudzicka-Strugała I et al., 2024)*

Microscopic examination of BV

BV - *Gardnerella*



Healthy



Chen X *et al.*, (2021)

Vaginal Microbiome in AV

AV is characterised by **depletion of Lactobacilli**, a **predominance of aerobic microorganisms**, prominent inflammation and epithelial disruption

Agoni L et al., 2026

TYPICAL ORGANISMS

Aerobic

- *Escherichia coli*
- *Enterococcus faecalis*
- *Enterococcus faecium*
- Group B streptococci
- *Staphylococcus spp.*

HOST RESPONSE

Inflammation

- Abundant leukocytes
- Toxic leukocytes
- Proinflammatory mediators
- Parabasal cells

ASSOCIATED WITH

Adverse outcomes

- Preterm birth
- Chorioamnionitis
- Neonatal infections

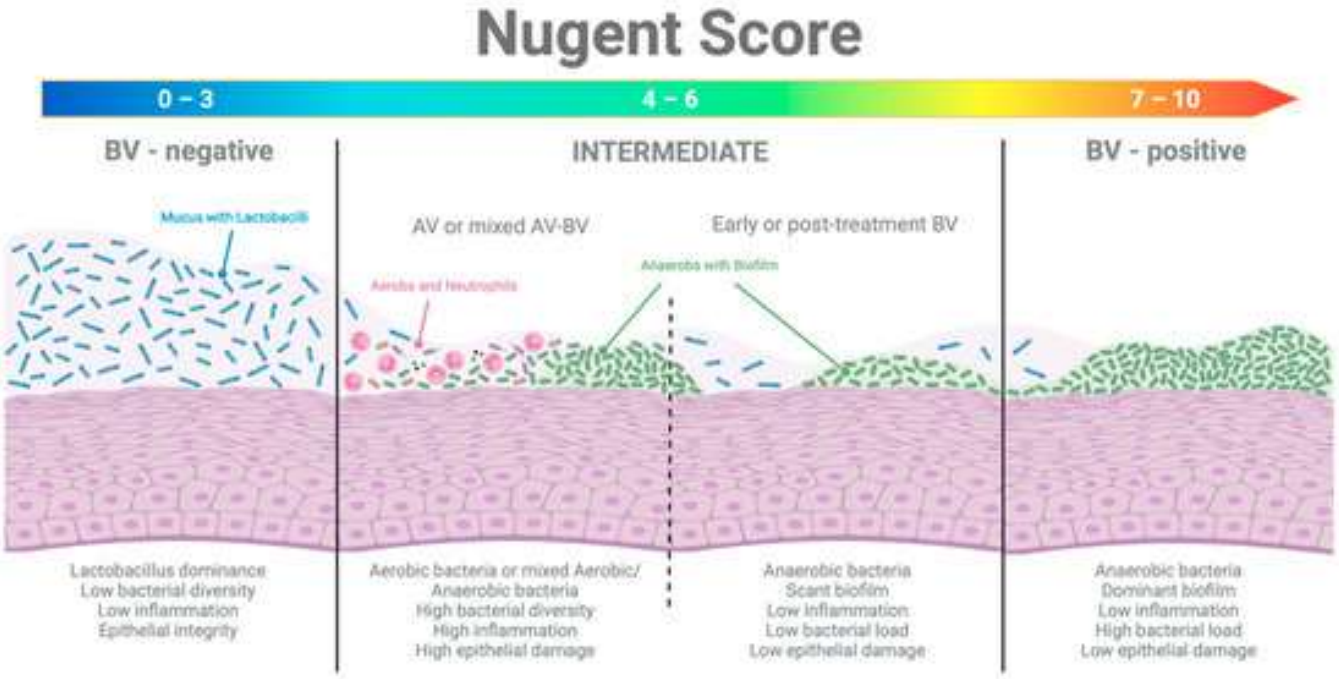
Diagnosed by wet-mount microscopy (Donders score):

Lactobacillary grade | Background flora | Leukocytes | Toxic leukocytes | Parabasal cells

	AV	BV
DOMINANT MICROBES	**Aerobic (*E. coli, Enterococcus, Staphylococcus*)**	Anaerobic (*Gardnerella, Prevotella, Mobiluncus*)
INFLAMMATION	**Marked: abundant and toxic leukocytes**	Limited: few leukocytes
EPITHELIUM	**Disrupted, with parabasal cells**	Usually preserved
BIOFILM	**No characteristic biofilm; no clue cells**	Polymicrobial biofilm; clue cells
SYMPTOMS	**Burning, dyspareunia, erythema, yellow discharge**	Malodour and discharge
DIAGNOSIS	**Donders score (wet-mount microscopy)**	Amsel criteria / Nugent score

Based on Agoni L *et al.*, (2026)

BV and AV: Distinct Biological Entities



Agoni *et al.*, (2026)

Intermediate Nugent scores (4–6) are heterogeneous - they may reflect early BV, AV, mixed AV–BV, or post-treatment states, not a single transitional entity.

Why it matters

The Nugent score captures morphotypes only, not inflammation, epithelial integrity, or host response. AV is not designed to be diagnosed by Nugent scoring and requires the Donders system.

Women with true AV, or mixed AV–BV, may be misclassified within the intermediate Nugent category if no dedicated AV assessment is performed.

Bacterial vaginosis and aerobic vaginitis differ in microbiota, host response, biofilm biology and clinical consequences a distinction the Nugent score alone cannot capture

Vaginal microbiome in VVC (Thrush)

VVC (thrush) is characterised by **overgrowth of Candida**, most often *C. albicans*, which *albicans*, which provokes a **damaging host inflammatory response** rather than a shift in a shift in the bacterial biofilm *Willems HME et al., 2020*

TYPICAL ORGANISMS

Fungal

- ***Candida albicans (85–95% of of cases)***
- *Candida glabrata*
- *Candida tropicalis*
- *Candida krusei*
- *Candida parapsilosis*

Sobel JD, 2016; Yano J et al., 2018

HOST RESPONSE

Inflammation

- Neutrophil (PMN) recruitment recruitment
- Impaired neutrophil killing ("anergy")
- Candidalysin-induced epithelial damage
- NLRP3 / IL-1β & IL-8 release

Moyes DL et al., 2016; Yano J et al., 2018

ASSOCIATED WITH

Risk factors

- Diabetes mellitus
- Pregnancy / elevated oestrogen
- Immunosuppression (HIV, transplant)
- Broad-spectrum antibiotic use
- RVVC: ~140M women/year

Gonçalves B et al., 2016; Denning DW et al., 2018

Diagnosed by wet-mount microscopy and clinical criteria:

- **Vaginal pH normal (<4.5)**
- **10% KOH microscopy**
- **Pseudohyphae / budding yeast**
- **Clinical symptoms & signs**
- **Culture (non-albicans)**

	VVC	BV
DOMINANT MICROBES	**Fungal (*C. albicans*, non-albicans *Candida*)**	Anaerobic (*Gardnerella, Prevotella, Mobiluncus*)
VAGINAL pH	**Normal, <4.5**	>4.5
INFLAMMATION	**Marked: localised erythema & oedema**	Limited: few leukocytes
EPITHELIUM	**Yeast-to-hypha invasion; usually intact**	Usually preserved; clue cells
SYMPTOMS	**Itching, thick white discharge, dyspareunia**	Malodour, thin grey discharge
DIAGNOSIS	**Wet-mount / KOH microscopy, culture**	Amsel criteria / Nugent score

Based on Willems HME *et al.,* (2020); Denning DW *et al.*, (2018)



Candida albicans

One of the most causative agents in VVC

PREVALENCE

up to **75%**

of women will experience vulvovaginal candidiasis (VVC) at least once in their lifetime *(Denning DW et al., 2018)*. *C. albicans* causes up to 84% of cases *(Benedict K et al., 2024)*

VIRULENCE FACTORS

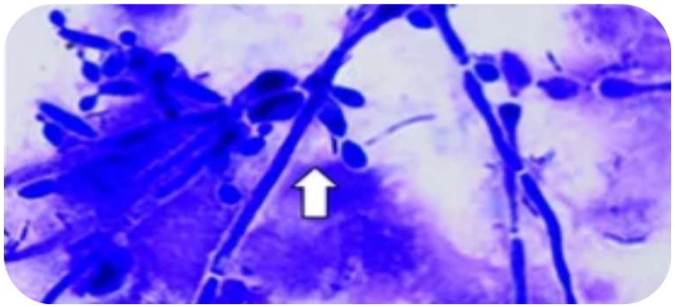
Yeast-to-hyphae switching, secreted aspartyl proteinases and the cytolytic toxin candidalysin *(Moyes DL et al., 2016)*, plus **biofilm formation** *(Rodríguez-Cerdeira C et al., 2020)*

ROLE IN POOR HEALTH OUTCOMES

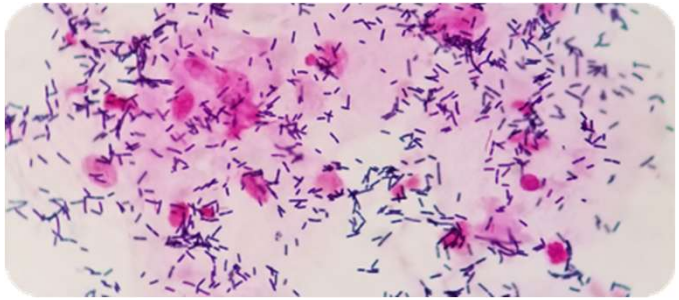
- Recurrent VVC (RVVC) substantially reduces quality of life, sexual function and mental health *(Roselletti E et al., 2026)*
- Associated with adverse pregnancy outcomes, including preterm delivery and intra-amniotic infection *(Wang Y et al., 2024)*
- Increased risk of sexually transmitted infections and pelvic inflammatory disease *(Wang Y et al., 2024)*
- Up to 9% of women develop RVVC (≥4 episodes/year), driving major economic and psychosocial burden *(Denning DW et al., 2018)*

Microscopic examination of VVC

VVC – *C. albicans*



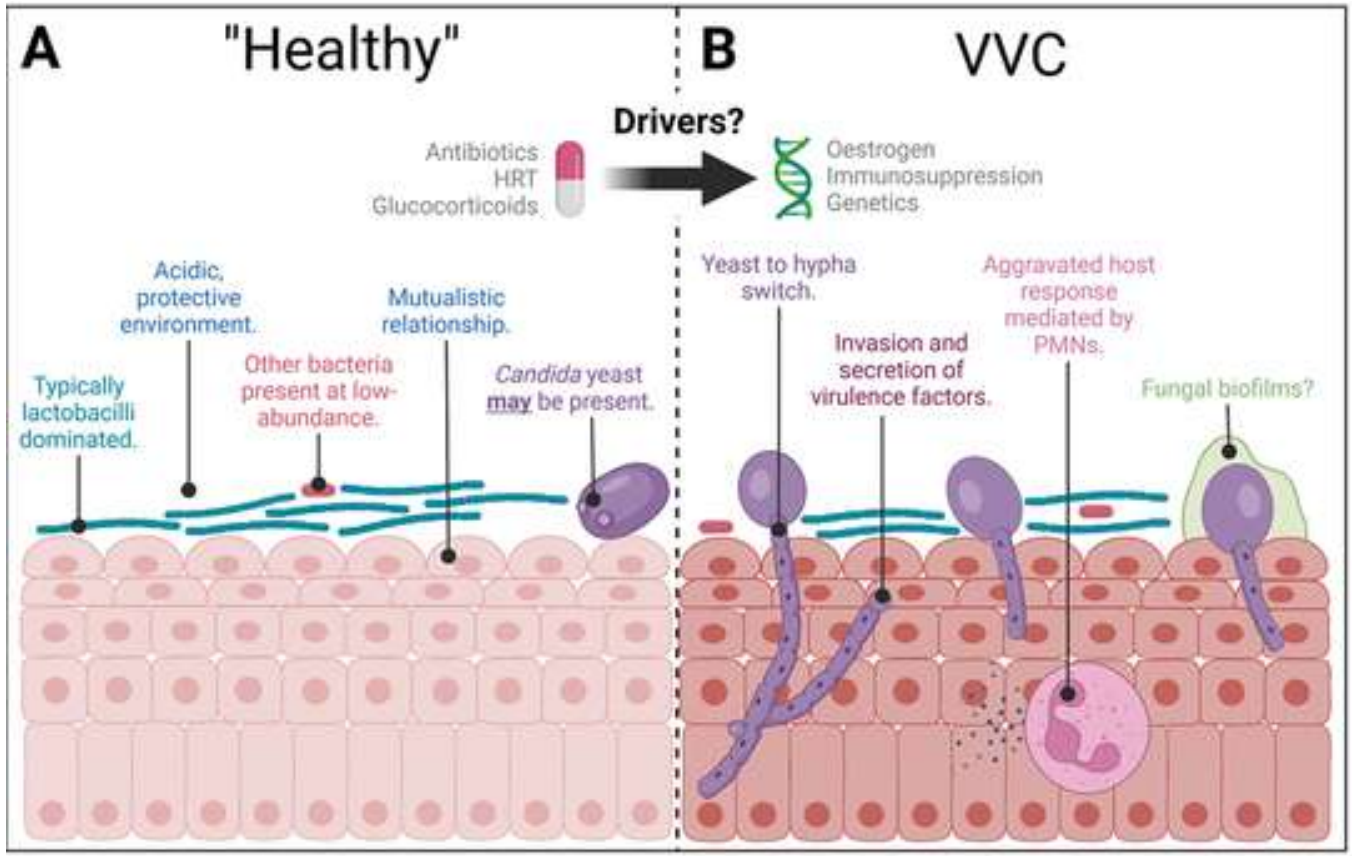
Healthy



Lindau *et al.*, (2009)

Chen X *et al.*, (2021)

VVC pathophysiology



Murali *et al.,* (2025)

Relationship between Vaginal Microbiome and BV, VVC and AV

Vaginal Microbiome	BV	VVC	AV
Aerococcus	↑	↑	-
Atopobium	↑	↑	-
Bacteroides	↑	↑	-
Bifidobacterium	↑	↑	-
Candida	-	↑	-
Clostridium	↑	↑	-
Escherichia	↑	↑	↑
Gardnerella	↑	↑	-
Klebsiella pneumoniae	-	-	↑
Lactobacillus	↓	↓	↓
Prevotella	↑	↑	-
Staphylococcus aureus	-	-	↑
Streptococcus	↑	↑	↑

Zhang, Y *et al.,* (2026)

How Do Microbial Changes Cause Symptoms?

ODOUR (BV)	BV-associated anaerobes	Biogenic amines (putrescine, cadaverine)	Fishy odour, especially at higher pH
THIN DISCHARGE (BV)	Mucin-degrading bacterial enzymes	Protective mucus breaks down	Thinner discharge
REDNESS, BURNING & PAIN (AV/VVC)	Aerobic bacteria or *Candida* with host response	Inflammation and neutrophils	Redness, swelling, burning and dyspareunia

BV usually has little visible inflammation; AV and VVC are more inflammatory.



Yeoman et al., 2013; Nelson et al., 2015; Muzny et al., 2019; Naglik et al., 2014; Moyes et al., 2016; Donders et al., 2017.

Do Microbial Findings Predict Symptoms?

Symptom severity and microbiome measures do not always move together

1 Does more dysbiosis mean worse symptoms?

BV can be asymptomatic. In one comparative study, symptomatic and asymptomatic BV showed no consistent differences in Nugent score or microbiota composition.

For VVC, *Candida* carriage may be symptom-free; symptomatic disease is associated with inflammation as well as fungal burden.

2 Do symptoms clear as the microbiome recovers?

Clinical cure (symptoms) and microbiological cure (flora or test results) should be measured separately.

Symptoms may resolve before the microbiome fully normalises.

Persistent symptoms warrant reassessment, even if a microbiome test looks normal.

Treat and assess the patient, not a microbiome score alone.



Fiedler et al., 2026; Pericolini et al., 2017; CDC STI Treatment Guidelines, 2021.

Comparing Symptoms: BV, AV & VVC

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	Thrush (VVC)	Bacterial vaginosis (BV)	Aerobic vaginitis (AV)
How common	About 75% experience ≥1 episode[1]	23–29% of reproductive-age women regions[5]	Estimated 7–12% in studied populations[3]
Recurrence	Recurrent VVC: ≥3 symptomatic episodes year; affects <5%[1]	Up to 80% recurrence within a year after antibiotics[4]	May be persistent or recurrent; robust rates
Asymptomatic presentation	10–20% have asymptomatic *Candida*	Many cases are asymptomatic[2]	Typically inflammatory and symptomatic[3]
Associated microbes	*Candida albicans*; other *Candida* species[1]	*Gardnerella vaginalis, Prevotella* spp. and anaerobes[2]	*Escherichia coli, Enterococcus faecalis,* group streptococci[3]
Typical symptoms	Itching, soreness, thick curdy discharge[1]	Thin discharge and fishy odour[2]	Burning, dyspareunia, inflammation, yellow discharge[3]
Diagnosis	KOH wet mount; culture/PCR when	Amsel criteria or Nugent score[2]	Wet mount microscopy and AV score[3]
Treatment	Topical azoles or oral fluconazole, as	Metronidazole or clindamycin[2]	Individualised; local antimicrobial ± anti-inflammatory treatment[3]
Clinical considerations	Antifungal resistance, skin irritation,	Associated with increased STI acquisition pregnancy complications[2]	Associated with preterm birth and



Supporting a *Lactobacillus*-rich environment may reduce the risk, aid recovery and alleviate symptoms

1. CDC. Vulvovaginal Candidiasis, STI Treatment Guidelines (2021). 2. CDC. Bacterial Vaginosis, STI Treatment Guidelines (2021). 3. Donders GGG et al. Res Microbiol. 2017;168:845–858. 4. Abbe C, Mitchell CM. Front Reprod Health. 2023;5:1100029. 5. WHO. Bacterial vaginosis fact sheet (2025).

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Probiotics for Vaginal Dysbiosis



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Why Consider Probiotics Alongside Treatment ?

A strain-specific strategy to support vaginal microbiome recovery

1



The challenge: repeated antimicrobials

Recurrent vaginal infections can lead to repeated antimicrobial courses. This increases treatment burden and antimicrobial exposure, while lasting microbiome recovery remains difficult.

Abbe & Mitchell, 2023; Muzny & Sobel, 2022

2



The rationale: restore protection

Selected *Lactobacillus* strains may help re-establish a low-pH, lactobacilli-rich environment and limit opportunistic pathogens.

Muzny et al., 2019; Donders et al., 2017

3



The evidence: strains matter

"The current state of evidence suggests that probiotic effects are strain specific."

Joint FAO/WHO Working Group, 2002

Probiotics are an **adjunct to indicated treatment;** clinical effects depend on the strain, formulation and condition.



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Probiotics in vaginal dysbiosis

BV, AV and VVC share a **loss of protective Lactobacillus dominance**. Antibiotics and antifungals clear the pathogen but do not pathogen but do not rebuild the flora, so recurrence is high. **Probiotics are studied as an adjunct.**

BV CURE

RR 2.57

Probiotics alone vs placebo, day 30
30
95% CI 1.96–3.37

Wang et al., 2019 · 3 RCTs, n=675

BV RECURRENCE

–45%

Lower risk, n=1,234
RR 0.55 (95% CI 0.33–0.91)

Chieng et al., 2022 · 10 RCTs

VVC CURE

OR 3.43

Probiotics vs control
95% CI 2.40–4.88 · recurrence OR 0.33

Abavisani et al., 2024 · 35 RCTs

VVC · ADJUNCT

RR 1.41

Clinical cure <1 month, added to antifungal
95% CI 1.14–1.74 · low certainty

Chen et al., 2026 · 14 RCTs

HOW PROBIOTICS MAY HELP

- Restore lactobacilli
- Lower vaginal pH
- Lower Nugent score
- Crowd out pathogens
- Fewer recurrences



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Meta-analytic evidence for probiotic efficacy

Two independent meta-analyses of randomised controlled trials

Chen R et al., 2022 — Reproductive Health

20 RCTs, 2,093 women with BV

RR 1.23 Probiotics + antibiotics vs antibiotics alone (95% CI 1.05–1.43, p=0.009)

RR 15.2 Probiotics alone vs placebo (95% CI 3.87–59.64, p<0.0001)

RR 1.12 Probiotics alone vs antibiotics alone — no significant difference (95% CI 0.60–2.07)

Conclusion: probiotics play a positive adjuvant role in BV treatment, though larger standardised trials are still needed.

Abavisani M et al., 2024 — Taiwan J Obstet Gynecol

35 RCTs, 3,751 women with BV or VVC

OR 5.97 BV cure rate with probiotics vs control (95% CI 2.62–13.59)

OR 0.34 Reduction in BV recurrence with probiotics (95% CI 0.17–0.71)

OR 3.43 VVC cure rate with probiotics vs control (95% CI 2.40–4.88)

Conclusion: probiotics are a beneficial adjunctive treatment for gynaecological infections, improving cure rate and reducing recurrence.

Both analyses report benefit specifically as an adjunct to standard treatment — not as a substitute for antibiotics or antifungals.



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Trusted friendly bacteria

Spotlight: Chen et al., 2022 - route of administration matters

Subgroup analysis of 14 RCTs comparing probiotics + antibiotics vs antibiotics alone (BV cure rate)

RISK RATIO BY ADMINISTRATION ROUTE



Oral: 5 trials, n=351. Vaginal: 8 trials, n=1,282. Oral reached statistical significance (p=0.002); vaginal did not (p=0.17).

KEY FINDINGS FOR ORAL ADMINISTRATION

- When taken orally, probiotics as an adjunct to antibiotics achieved a significantly higher BV cure rate than antibiotics alone.
- After excluding one heterogeneous study, the oral-only subgroup showed a stronger, more consistent effect (RR 1.93, 95% CI 1.59–2.35, p<0.00001) with no residual heterogeneity.

Interpretation: oral dosing may work partly through gut-immune modulation, since orally dosed strains are inconsistently recovered from the vagina itself.

Clinical Research of *L. rhamnosus* GR-1® and *L. reuteri* RC-14®

novonesis

The most researched strains for intimate health

(Petrova M et al., 2021)

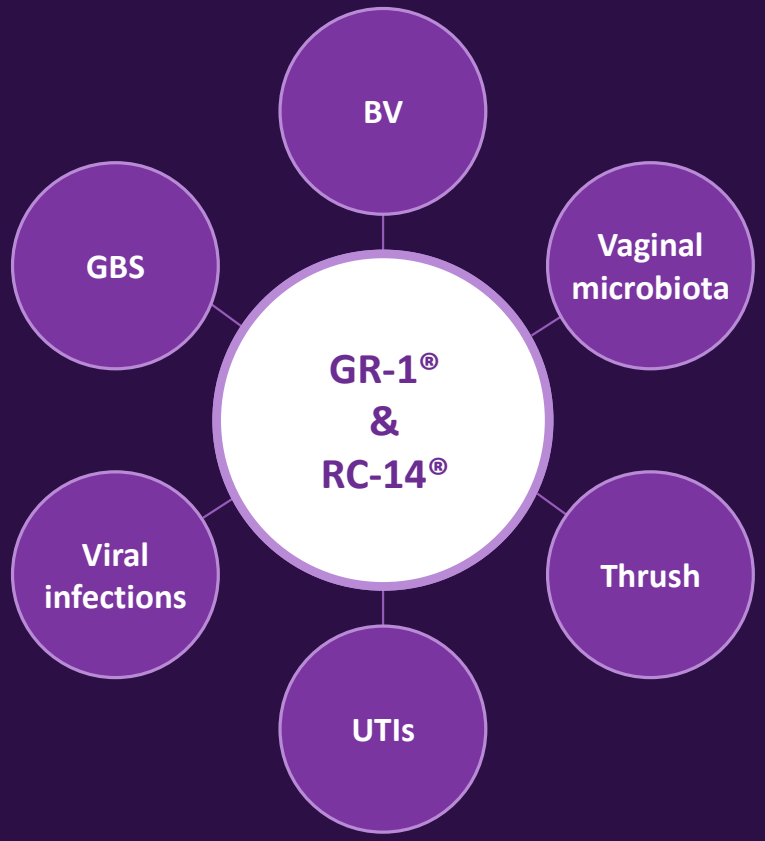
Clinically researched in thousands of women across life stages, from adolescents to postmenopausal

40
years of research

30+
gold standard clinical trials

13
trials in BV

10
trials assessing general vaginal microbiota composition



Optibac
Trusted friendly bacteria

Introducing Optibac For Women



For Women

Contains the worlds most researched strains for vaginal health. Specially formulated for those with Bacterial Vaginosis (BV), Thrush & UTIs. Also recommended to support reproductive health during fertility treatments.

- ✓ Contains 3 extensively researched probiotic strains: *Lactobacillus rhamnosus* GR-1®, *Lactobacillus reuteri* RC-14® & *Lactobacillus paracasei* F-19®
- ✓ Proven to reach the intimate area alive
- ✓ BV symptoms are often confused with Thrush – For Women can be taken for both conditions



Directions for use:

During infection: 2 capsules per day
During fertility treatment: 2 capsules per day
To maintain vaginal health: 1 capsule per day
Age 12+



L. rhamnosus GR-1® & *L. reuteri* RC-14®

The most researched strains for intimate health

Researched for nearly 40 years in thousands of women worldwide including teens, pregnant women and postmenopausal women *(Petrova et al., 2021)*

Clinically proven to:

Reach the vaginal tract
Reach the vaginal tract within 7 days when taken orally.

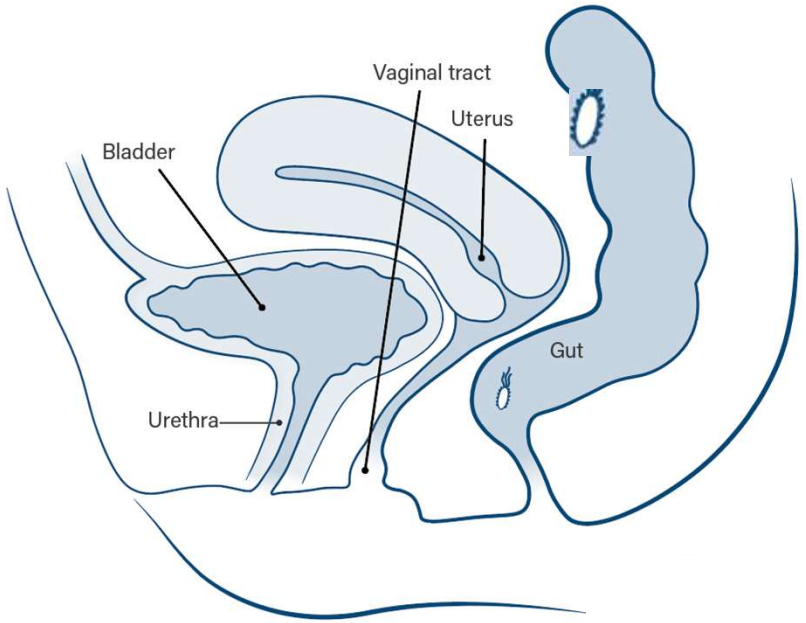
Multiple modes of action
Harbour at least 5 known modes of action, including lactic acid and anti-microbial production.

Increase vaginal Lactobacilli
Increase vaginal Lactobacilli, including commensal species such as L. crispatus.

Support BV, thrush and UTIs
Supports with BV, thrush and UTIs, working as monotherapy and boosting the efficacy of antibiotics and antifungals.

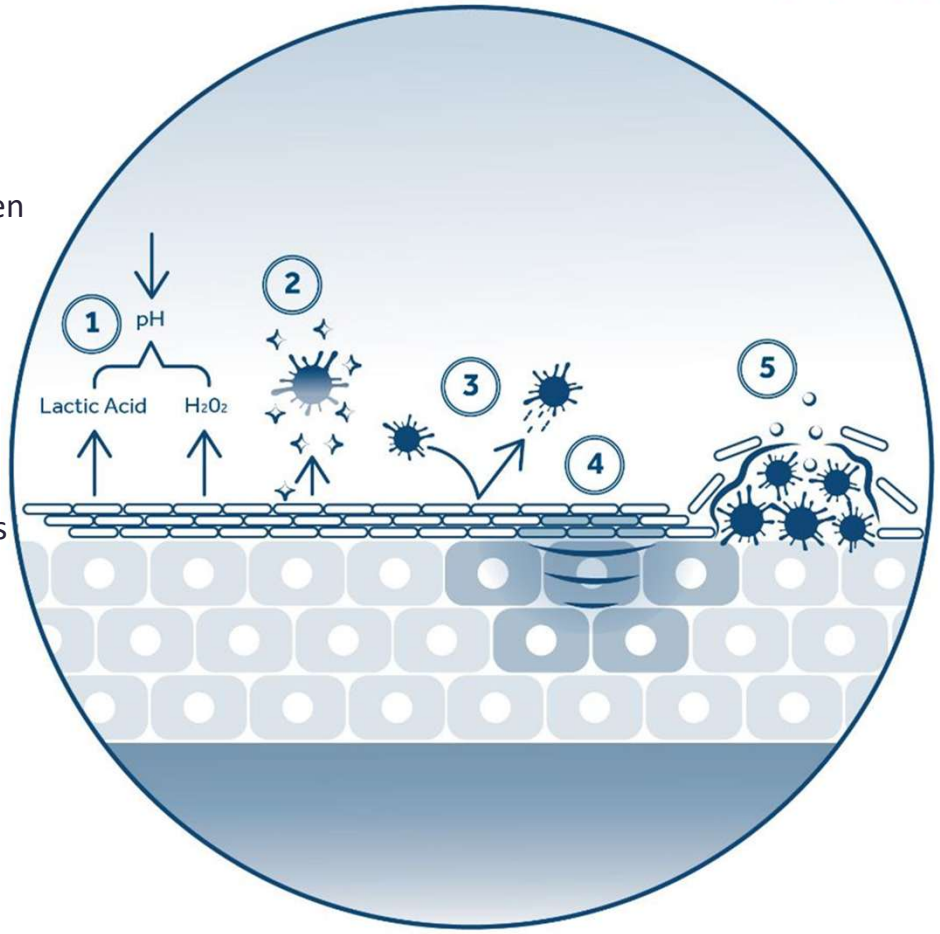
BV symptom relief
Reduces Nugent/Amsel scores, improves symptoms (e.g. discharge), inhibits growth of BV pathogens including G. vaginalis, and may lower risk of recurrence.

UTI protection
Inhibits a range of causative pathogens, including E. coli, and reduces the risk of UTIs by half in postmenopausal women.



Modes of Action

1. Restores a healthy pH <4.5 by producing lactic acid and hydrogen peroxide (H_2O_2)
2. Produces bacteriocins which help to kill pathogens
3. Competitive inhibition: microbes compete for space & nutrients
4. Modulates cytokines to decrease inflammation
5. Produces biosurfactants, which break down pathogen biofilms from *G. vaginalis* and *E. coli*



How the strains in FW break down biofilms

1. Biofilm forms around pathogens

Associated with complex, recurrent UTIs and BV.



For Women in BV

GR-1® + RC-14®: clinical evidence in BV



Clinical efficacy

Alongside antibiotics

Increased the efficacy of antibiotics by **50%**.

(Anukam et al., 2006; Martinez et al., 2009)

As monotherapy

60% of women had normal Nugent scores post supplementation period.

Vujic et al., (2013)



Symptoms

Clinical improvement in symptoms, including discharge and irritation.

(Martinez et al., 2009; Zhang et al., 2021)

Over 90% of women self-reported symptom improvement when taking GR-1 + RC-14 with cranberry and inulin.

Cheng et al., 2022)



Vaginal microbiome

Shift towards Lactobacillus-dominant communities, including *L. crispatus*.

(Macklaim et al., 2015)

Reduced *G. vaginalis* detection.

Vujic et al., (2013)



RCT: *L. rhamnosus* GR-1® and *L. reuteri* RC-14® 14® alongside antibiotics in women with BV

novonesis

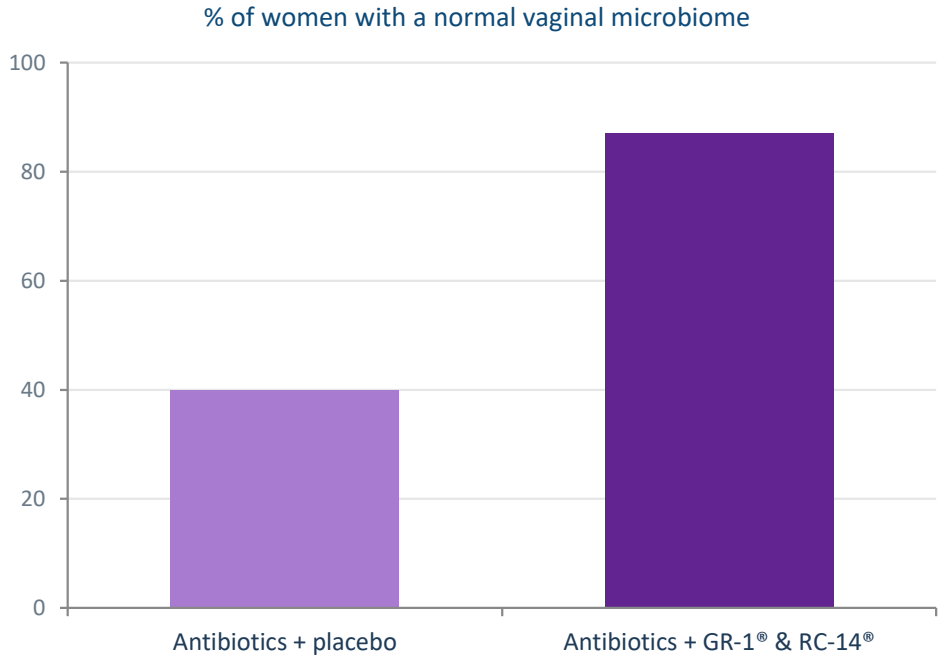
Gold standard trial in 125 women with BV taking antibiotics for one week.

Design

125 women with BV, presenting with vaginal irritation, discharge and fishy odour, took antibiotics for 1 week alongside either GR-1® and RC-14® (2 capsules daily) or placebo. Probiotic/placebo continued for 30 days

Over 2x GR-1® and RC-14® more than doubled the efficacy of antibiotic treatment. BV cure included resolution of symptoms and signs, including irritation, discharge and fishy odour.

96% of women in the probiotic group had high levels of Lactobacilli, suggesting reduced risk of recurrence



Anukam *et al.,* (2006)

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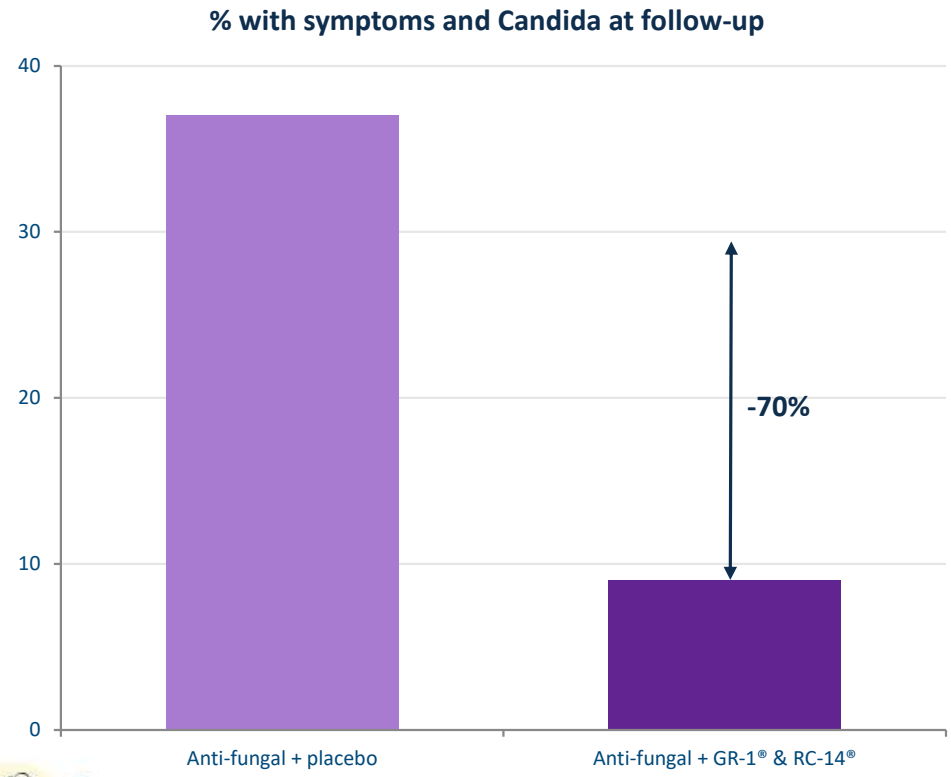
RCT: *L. rhamnosus* GR-1® and *L. reuteri* RC-14® alongside antifungals in women with Thrush



Martinez *et al.* (2009)

Design

Gold standard clinical trial with 55 women with culture-confirmed VVC and associated symptoms, including vaginal discharge with itching, burning, dyspareunia or dysuria. Participants received a single 150 mg dose of fluconazole, followed by GR-1® & RC-14® or placebo daily for 4 weeks.

Results

At follow-up, women in the probiotic group had significantly fewer symptoms such as vaginal discharge, as well as a reduction in *Candida* cells.

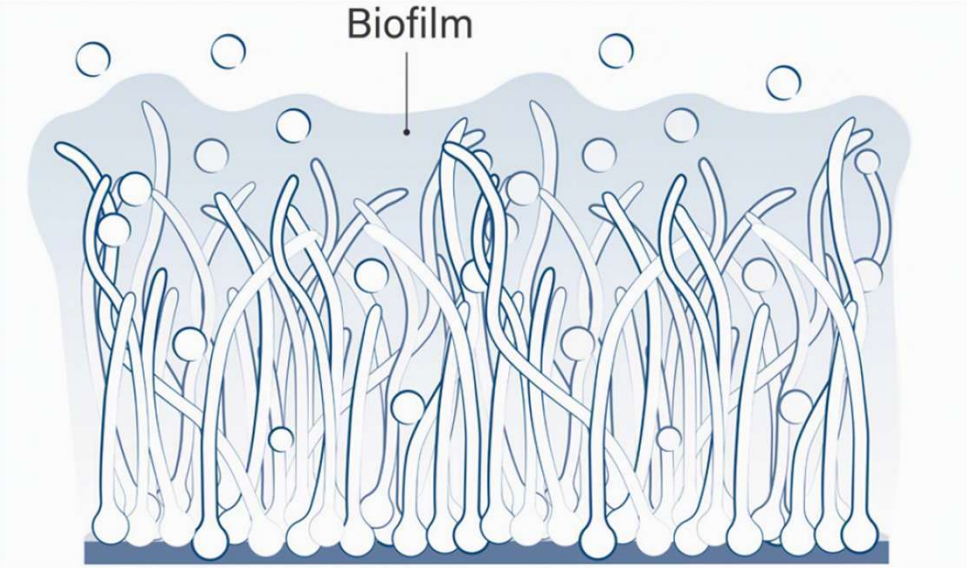
65% of women who self-diagnosed and treated thrush were found to be positive for BV or another vaginal infection.

Thrush: biofilms and the misdiagnosis problem

Candida forms mature biofilms - and many women treating 'thrush' don't have thrush at all.

For Women inhibits fungal biofilms from adhering and growing -biofilms are associated with recurrence and resistance.

Overuse of anti-fungals may increase the risk of skin irritability, pain, swelling and anti-fungal resistance.



A mature C. albicans biofilm

Evidence against AV-associated pathogens

Evidence gap: no published clinical RCTs have tested GR-1®/RC-14® specifically in women diagnosed with aerobic vaginitis (AV).
The evidence below is ***in vitro***, against the same organisms that define AV.

E. coli

Causes 70–90% of UTIs, and a common AV pathogen

- GR-1® produces inhibitory compounds against E. coli and co-aggregates with it, aggregates with it, reducing its ability to adhere to uroepithelial cells (in vitro). (in vitro).
- A surface lectin-like protein on GR-1® mediates adherence to vaginal epithelium epithelium while blocking E. coli and other urogenital pathogens from doing the doing the same.

Reid G et al., Can J Microbiol, 1988;34:344–351
Petrova MI et al., Sci Rep, 2016;6:37437

Enterococcus faecalis

A common AV pathogen, also implicated in UTIs

- Lactobacillus species, including RC-14®'s parent strain, inhibit Enterococcus growth in vitro.
- A surface-binding protein purified from RC-14® specifically blocks Enterococcus faecalis adhesion.

McGroarty JA & Reid G, Microb Ecol Health Dis, 1988;1:215–219
Heinemann C et al., FEMS Microbiol Lett, 2000;190:177–180

This provides biological plausibility, not clinical proof, for use in AV — dedicated RCTs in AV-diagnosed patients are a clear research priority given how new AV is as a distinct diagnostic category.

Recommending For Women

Specially formulated for those with Bacterial Vaginosis (BV), Thrush & UTIs- safe for acute and ongoing use.

During an infection

2 capsules daily

Alongside any anti-fungal or antibiotic treatment, for faster and more effective relief. Also recommended during fertility treatment.

For maintenance

1 capsule daily

For ongoing use and effective maintenance of a healthy vaginal flora.

Unlike other intimate health products, For Women increases Lactobacilli and supports the vaginal microbiome. It can be used on its own or alongside conventional treatments.



Recurrent symptoms: the clinical take-home

01 IDENTIFY

Do not assume every recurrence is thrush. Assess the symptom symptom pattern and test when symptoms persist or return.

02 DIFFERENTIATE

BV, AV and VVC differ in pH, dominant microbes, inflammation and inflammation and appropriate treatment.

03 TREAT

Use diagnosis-led conventional treatment for the active condition. Avoid repeated, ineffective empirical treatment.

04 RESTORE

Rebuild Lactobacillus dominance. Strain-specific probiotics can complement appropriate antibiotic or antifungal treatment.

05 PROTECT

Recurrence is common. Continue microbiome support, address modifiable triggers and review response.



What we offer

- UK practitioner accounts – 40% off RRP.

  Also available at CAM wholesalers (TND, Pure & Natural)

- Online technical and clinical training
- Monthly e-Newsletter
- Webinars
- Practitioner support
- Email us: **health.professionals@optibac.com**



Thank You



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