

Xpert® Xpress MVP (US-IVD)

Detection of *Candida* Species Associated with Vulvovaginal Candidiasis

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Vulvovaginal Candidiasis and Causative Agents

Vulvovaginal candidiasis (VVC) is caused by an overgrowth of *Candida* species and affects millions of women every year. Although *Candida albicans* is the main cause of VVC and accounts for up to 90% of cases,^{1,2} non-*albicans Candida* (NAC) species, particularly *C. glabrata*, have increasingly been reported as the etiologic agents. Several studies examining the species distribution of yeast isolates from women with VVC show that *C. albicans* and *C. glabrata* are the most prevalent, collectively accounting for 93–97% of the isolates, while *C. parapsilosis*, *C. tropicalis*, and *C. krusei* are less common (Table 1).³⁻⁵ Notably, *C. glabrata* and other non-*albicans Candida* species are observed in 10–20% of women with recurrent VVC.⁶

Table 1. Species distribution of yeast isolates from women with vulvovaginal candidiasis

Species	Prevalence ³ (n= 93,775)	Prevalence ⁴ (n= 429)	Prevalence ⁵ (n=231)
<i>C. albicans</i>	89.0%	77.3%	73.9%
<i>C. glabrata</i>	7.9%	15.9%	19.8%
Subtotal	96.9%	93.2%	93.7%
<i>C. parapsilosis</i>	1.7%	3.9%	0.96%
<i>C. krusei</i>	--	1.6%	0.96%
<i>C. tropicalis</i>	1.4%	1.1%	0.96%
<i>C. lusitaniae</i>	--	0.2%	--
<i>C. guilliermondii</i>	--	--	0.96%
<i>Saccharomyces cerevisiae</i>	--	--	0.52%

-- Not determined/detected

Treatment of Vulvovaginal Candidiasis

In general, VVC is classified as either uncomplicated or complicated, based on clinical presentation, microbiological findings, recurrent episodes, host factors, and response to treatment.^{2,6,7} Clinical practice guidelines for management of VVC are available from the American College of Obstetrics and Gynecologists (ACOG), the Infectious Diseases Society of America (IDSA), and the United States Centers for Disease Control and Prevention, and these provide guidance for therapy based upon VVC classification. Topical or oral azole antifungals remain the primary treatment option for most cases of uncomplicated VVC which account for up to 90% of VVC cases.^{2,6,7} According to the IDSA guideline, most *Candida* spp., with the exception of *C. krusei* and *C. glabrata*, respond to oral fluconazole.⁷

For complicated VVC (i.e., severe VVC, recurrent VVC, cases that are non-responsive to therapy, or those caused by a non-*albicans Candida*), a longer duration of therapy with either fluconazole or a non-fluconazole azole (oral or topical) is recommended depending on the causative agent.^{2,6,7} In instances of recurrent VVC with a non-*albicans Candida* (including *C. glabrata*), an alternate therapy such as an intravaginal formulation of boric acid is recommended.^{2,6,7} *C. krusei* is intrinsically resistant to fluconazole but generally responds to alternate topical antifungal agents.⁷ If symptoms recur beyond these alternative treatment regimens, referral to a specialist is recommended.⁶

In assessing the antifungal susceptibility of *Candida* spp. isolated from women with VVC, Richter et al reported that *C. glabrata* isolates exhibited decreased susceptibility to fluconazole, while *C. krusei*, which only comprised 1.6% of the isolates, was

intrinsically resistant to fluconazole.⁴ In contrast, *C. albicans*, the most prevalent yeast, *C. parapsilosis*, *C. tropicalis* and *C. lusitanae*, which are also uncommon, did not show any significant decrease in fluconazole susceptibility.⁴

Xpert Xpress MVP and Detection of *Candida* species

The Xpert **Xpress** MVP test detects DNA targets from *Candida* spp. associated with VVC and is intended to aid clinicians in diagnosing vaginal infections in women with a clinical presentation consistent with VVC. The test, which uses clinician-collected and self-collected vaginal swab specimens in a clinic setting, reports two results for *Candida* spp. and the rationale is summarized in Table 2.

Table 2. Detection of *Candida* species in women with VVC by the Xpert Xpress MVP test

Result reported*	<i>Candida</i> spp. Targeted	Rationale
Candida group	<i>C. albicans</i> , <i>C. tropicalis</i> , <i>C. parapsilosis</i> <i>C. dubliniensis</i>	• <i>C. albicans</i> causes most VVC cases —up to 90%^{1,2} • Often respond well to fluconazole therapy^{4,7}
Candida glab-krus	<i>C. glabrata</i> , <i>C. krusei</i>	• <i>C. glabrata</i> is the second most common cause of VVC especially in recurrent disease¹⁻⁶ • Cases due to <i>C. krusei</i> are rare^{4,5} • <i>C. glabrata</i> and <i>C. krusei</i> have shown reduced susceptibility or intrinsic resistance to fluconazole^{4,7}

* Individual organisms are not differentiated

Detection of *Candida* group and *Candida* glab-krus by the Xpert **Xpress** MVP test was optimized to match yeast culture, which is the gold standard for diagnosing VVC in symptomatic women. In a prospective clinical study comparing the Xpert **Xpress** MVP to culture using clinician-collected vaginal specimens from symptomatic women, the overall performance of the Xpert **Xpress** MVP for *Candida* group was 98% positive percent agreement (PPA) and 94.6% negative percent agreement (NPA); for *Candida* glab-krus it was 93.6% PPA and 99.6% NPA, respectively.^{8,9} A similar performance was seen for self-collected vaginal swab specimens.^{8,9} The distribution of *Candida* spp. isolated from clinician-collected specimens was *C. albicans* 83.6%, *C. glabrata* 9.8%, *C. dubliniensis* 1.1%, *C. parapsilosis* 1.1%, *C. tropicalis* 0.9% and *C. krusei* 0.7%.⁸ This is consistent with other studies in which *C. albicans* and *C. glabrata* were the most dominant yeasts identified.³⁻⁵ The findings of this study support that the majority of the *Candida* glab-krus positive results by the Xpert **Xpress** MVP were due to *C. glabrata*.^{8,9}

Summary:

- *C. glabrata* is the second most common identified cause of VVC after *C. albicans*.
- *C. krusei* rarely causes VVC but may be important to identify due to its intrinsic resistance to the recommended therapy with fluconazole.
- The Xpert **Xpress** MVP test accurately detects *Candida* spp. causing VVC.
- Results from the Xpert **Xpress** MVP test should be interpreted in conjunction with the clinician's assessment, patient history and other laboratory or clinical data available.
- Clinicians should follow treatment recommendations for VVC in the clinical practice guidelines.

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