PURPOSE:

To provide a workflow and identification scheme for yeasts from clinical specimens.

INTERPRETATION AND REPORTING RESULTS:

Perform wet prep on suspect colonies. If yeast cells are seen, proceed as follows:

1. Sterile sites, blood cultures, body fluid cultures, biopsy specimens, invasively collected urines (straight catheter, suprapubic aspirate, cystoscopy specimen), corneal specimens, immunocompromised patients, neonates:
   - Preliminary report as Yeast species
   - Set up a Vitek 2 YST identification card
   - If yeast other than Candida spp. is identified, report as “Probable” and send to Dynalife for confirmation and susceptibility testing.
   - If Candida spp. is identified, report as “Isolated” and send to Dynalife for susceptibility testing.

2. Respiratory isolates including sputa and specimens obtained by bronchoscopy:
   Note: Candida organisms are not a cause of pneumonia and are most often contaminants of the procedure, except possibly in oncology or lung transplant patients or in neonates. Even in those cases, growth of Candida in lower respiratory specimens, regardless of species, does not correlate with disease. Yeasts are normal inhabitants of the mouth.
   - Set up a YST identification card
   - If *Cryptococcus spp.* is identified, report as “Probable” and send to Dynalife for confirmation and susceptibility testing if required.
   - If not *Cryptococcus spp.*, report as part of normal flora without specifically mentioning the presence of yeast (usual oropharyngeal flora)

3. Voided urines, superficial sites, wounds and drainage fluids:
   - Set up a YST identification card
   - If Candida spp. is identified, report identification. Susceptibility testing does not need to be performed.
   - If not Candida spp., report as Yeast species.

4. Isolates from any other sites:
   - Set up YST card
   - If identified as *Candida albicans*, report.
   - If not *Candida albicans*, report as YEANCA (Yeast, not *Candida albicans*)

Procedure Notes:

- Vitek 2 YST identification card: If results are not satisfactory (<90% confidence), perform urease test to rule out *Cryptococcus* and send isolate to Dynalife for identification if clinically significant.
- *Candida albicans:* budding yeast cells in smear, and feet in <48h
- *Candida dublinensis* is difficult to distinguish from *Candida albicans*. It is germ tube positive, but growth on Sabouraud agar at 42-45°C at 48h is absent or poor, whereas *Candida albicans* grows at 42-45°C in 48h. It is currently not recommended that laboratories routinely perform additional tests to differentiate these organisms. However, a history of clinical failure or persistence of "*Candida albicans"* despite therapy with fluconazole may alert the clinician that this may be *C. dublinensis*, as this organism can develop resistance to fluconazole during therapy.
- *Candida glabrata:* small yeasts in smear with no hyphae, better growth on Choc than BA
- Increasing resistance to fluconazole has been reported in *Candida* species.
- *Cryptococcus:* spherical pleomorphic budding yeast with no hyphae, typically mucoid due to presence of capsular material, becoming dryer and duller with age, urea +. *Cryptococcus gattii is* difficult to distinguish from *C. neoformans*. *C. neoformans* affects mostly immunocompromised hosts (malignancy, HIV, etc.) but *Cryptococcus gattii* may cause disease in immunocompetent hosts.
- Consider fungus species if susceptibility results seem quite resistant. For example, dimorphic fungi such as *Sporothrix shenckii* can appear yeast like in Gram-stain after incubation at 35˚C.

REFERENCES:

- Clinical Microbiology Procedures Handbook, 4th edition, ASM Press, 2016
- Jorgensen J.H., Pfaller M.A., Carroll K.C., Funke G., Landry M.L., Richter S.S., Warnock D.W. 2015. Manual of Clinical Microbiology, 11th edition, ASM Press, Washington, D.C.
- Vitek 2 Systems product information

REVISION HISTORY:

REVISION	DATE	Description of Change	REQUESTED BY
1.0	2017-02-06	Initial Release	L. Steven

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Jennifer G. Daley Bernier
A/ Manager, Laboratory Services
Signed by: Jennifer G. Daley Bernier