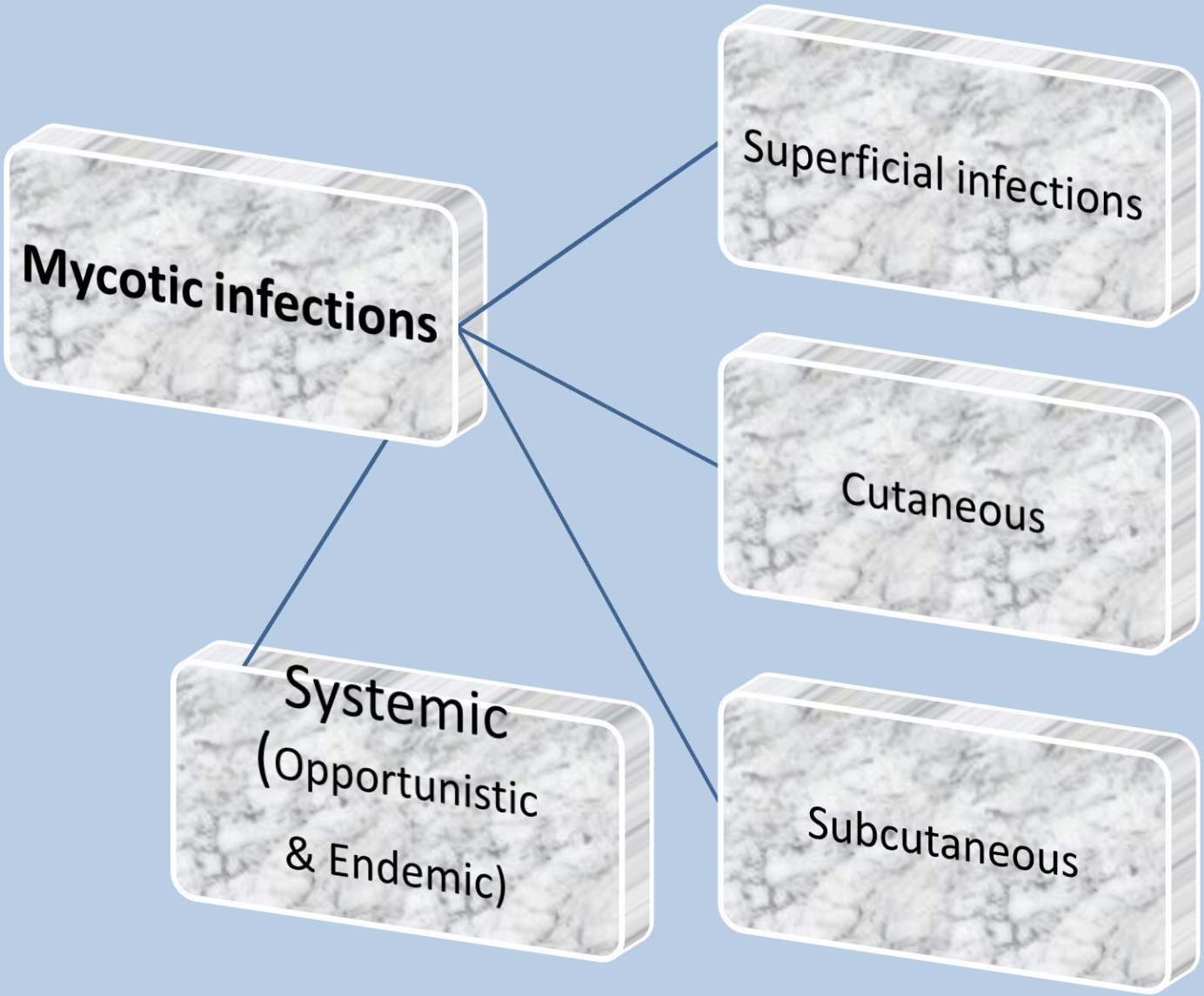
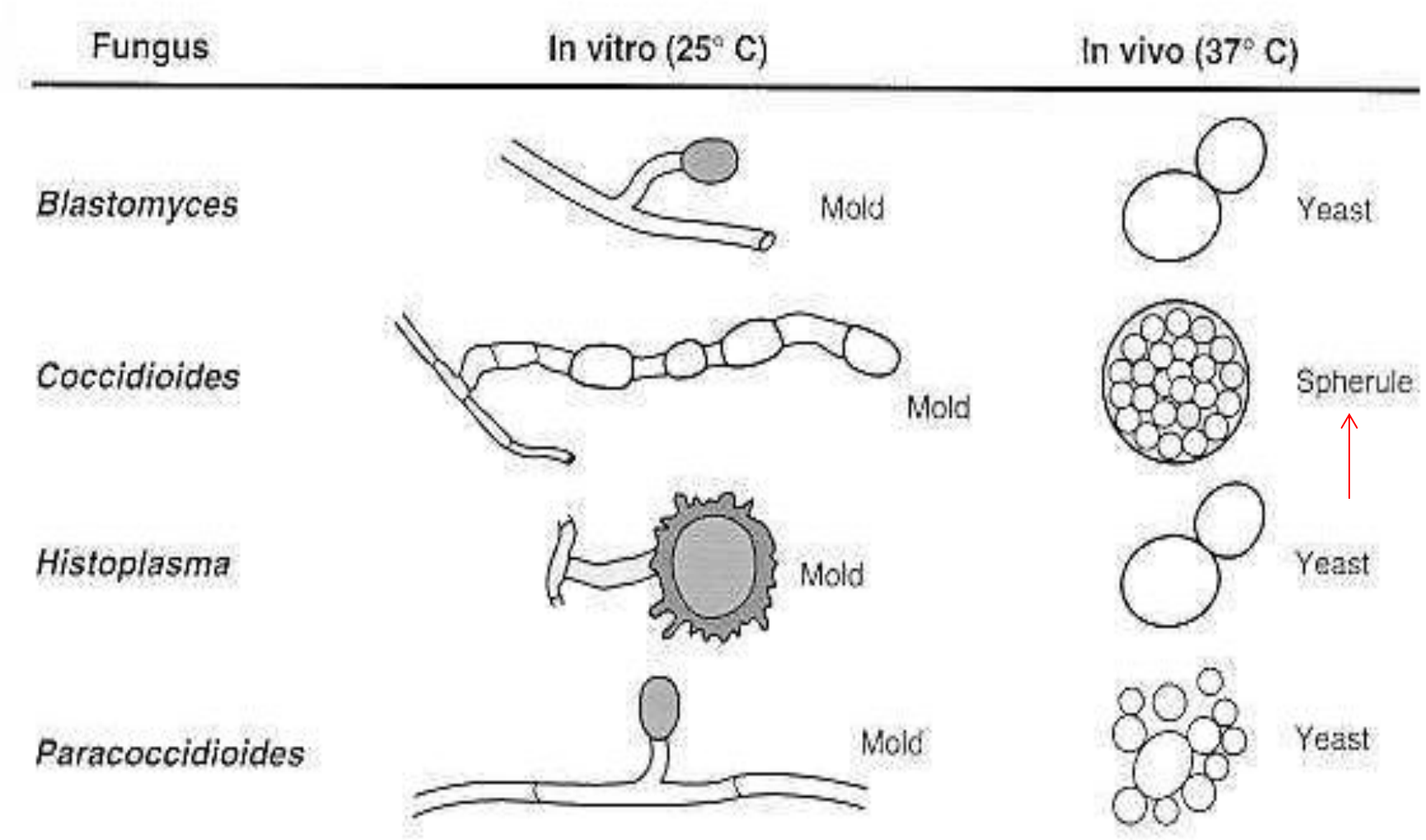
Candidiasis

Presented by:
Dr Lotfali


Mycotic infections
Superficial infections
Cutaneous
Systemic
(Opportunistic
& Endemic)
Subcutaneous

Endemic mycosis



Opportunistic mycosis

- Candidiasis
- Cryptococcosis

- Aspergillosis
- Mucormycosis

Candidiasis

One of the most common opportunistic infections

Agents:

Candida spp.> 150 species

❖ Frequent pathogens for human:

1-Candida albicans

2-C.glabrata

3-C.krusei

4-C.kefyr

5-C.guilliermondii6-

6-C.parapsilosis

7-C.tropicalis

8-C.lusitaniae

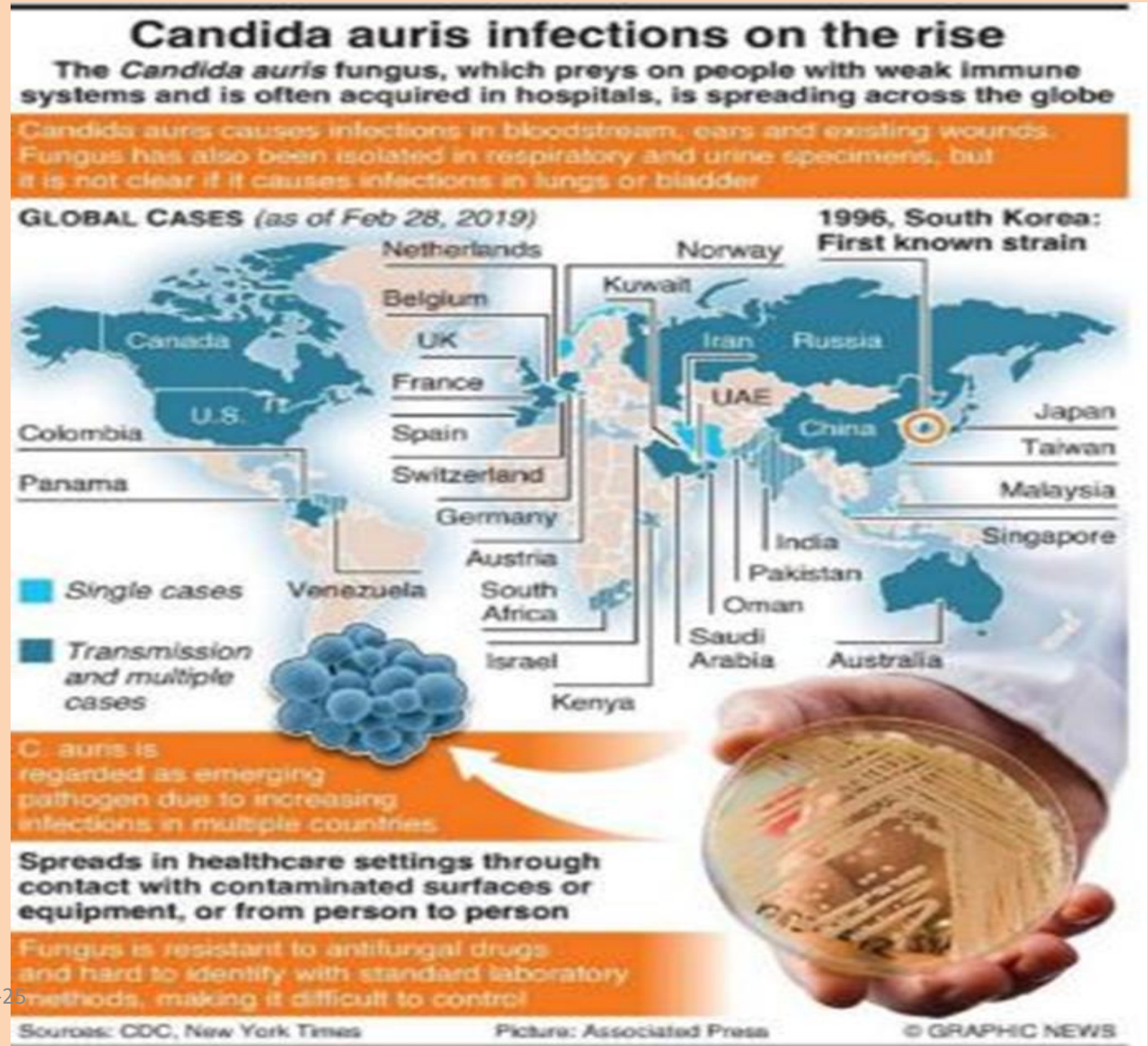
9-C.dubliniensis (A new species,1998)

10- C.auris (MDR)

Ecology:

Normal commensals of humans:
Skin, GI tract, sputum, female genital canal, urine

High incidence of carriage on the skin of health care workers


Candida auris infections on the rise
The Candida auris fungus, which preys on people with weak immune systems and is often acquired in hospitals, is spreading across the globe
Candida auris causes infections in bloodstream, ears and existing wounds. Fungus has also been isolated in respiratory and urine specimens, but it is not clear if it causes infections in lungs or bladder
GLOBAL CASES (as of Feb 28, 2019)
1996, South Korea: First known strain
Netherlands
Norway
Belgium
Kuwait
Canada
UK
Iran
Russia
France
UAE
U.S.
China
Japan
Colombia
Spain
Taiwan
Switzerland
Malaysia
Panama
Germany
Singapore
India
Austria
Pakistan
Single cases
Venezuela
South Africa
Oman
Transmission and multiple cases
Saudi Arabia
Australia
Israel
Kenya
C. auris is regarded as emerging pathogen due to increasing infections in multiple countries
Spreads in healthcare settings through contact with contaminated surfaces or equipment, or from person to person
Fungus is resistant to antifungal drugs and hard to identify with standard laboratory methods, making it difficult to control
Sources: CDC, New York Times
Picture: Associated Press
© GRAPHIC NEWS

Candida auris

- Another species called ***C. auris*** is emerging as a cause of invasive candidiasis **around the world.**
- Recently, ***C. auris*** has emerged as a cause of outbreaks of **candidaemia**, **wound infection**, and **otitis** in Asia, the Americas, the Middle East, and Europe.
- CDC (Centers for Disease Control and Prevention) is concerned about *C. auris* for three main reasons:

1. It is often multidrug-resistant, meaning that it is resistant to multiple antifungal drugs commonly used to treat *Candida* infections.
2. It is difficult to identify with standard laboratory methods, and it can be misidentified in labs without specific technology. Misidentification may lead to inappropriate management.
3. It has caused outbreaks in healthcare settings. For this reason, it is important to quickly identify *C. auris* in a hospitalized patient so that healthcare facilities can take special precautions to stop its spread.

Predisposing factors:

1-Physiological: Age, Pregnancy

2-Hematological: AIDS, Leukemia, Lymphoma

3-Endocrinological: Diabetes Mellitus, Hypoparathyroidism, Addison's disease

4-Iatrogenical: Antibiotics, Oral contraceptives Steroids, Intravenous catheters, Chemotherapy

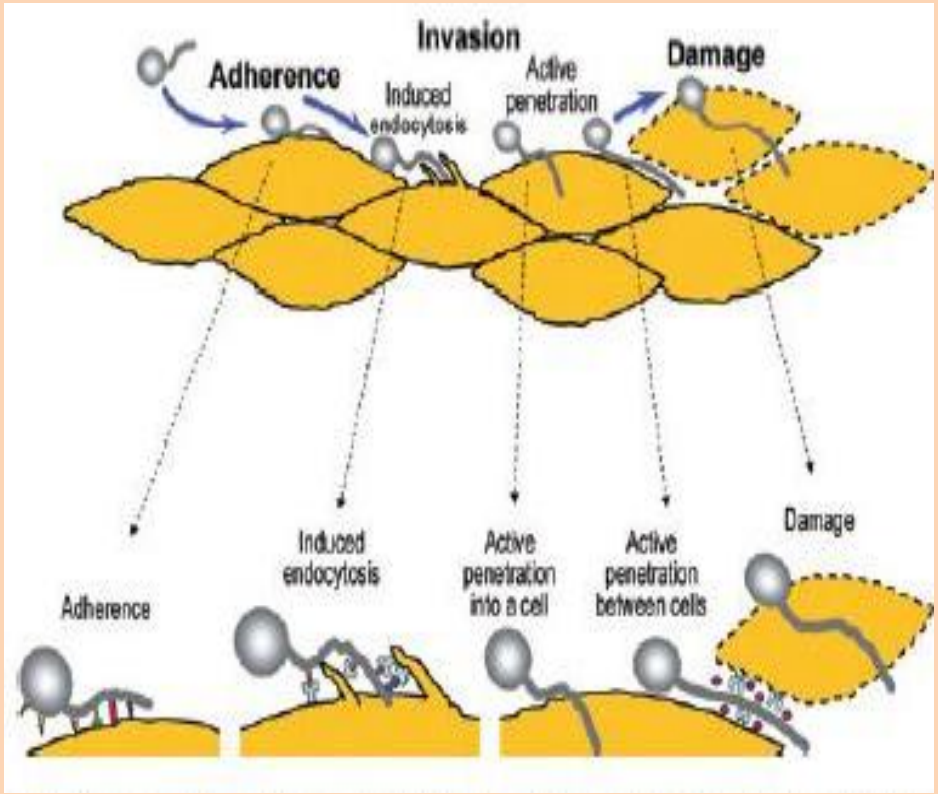
5-Impaired epithelial barrier:

Burns, Hydration, Maceration

6-Other factors: Avitaminosis A ,B. C…

Pathogenesis

Proteases (SAP1, 2 – SAP8)
Phospholipases
Adherence capabilities
Germ tube



Clinical manifestations:

- Virulance
- Toxic products
- Defence power of host
- Site of invasion

Clinical manifestations

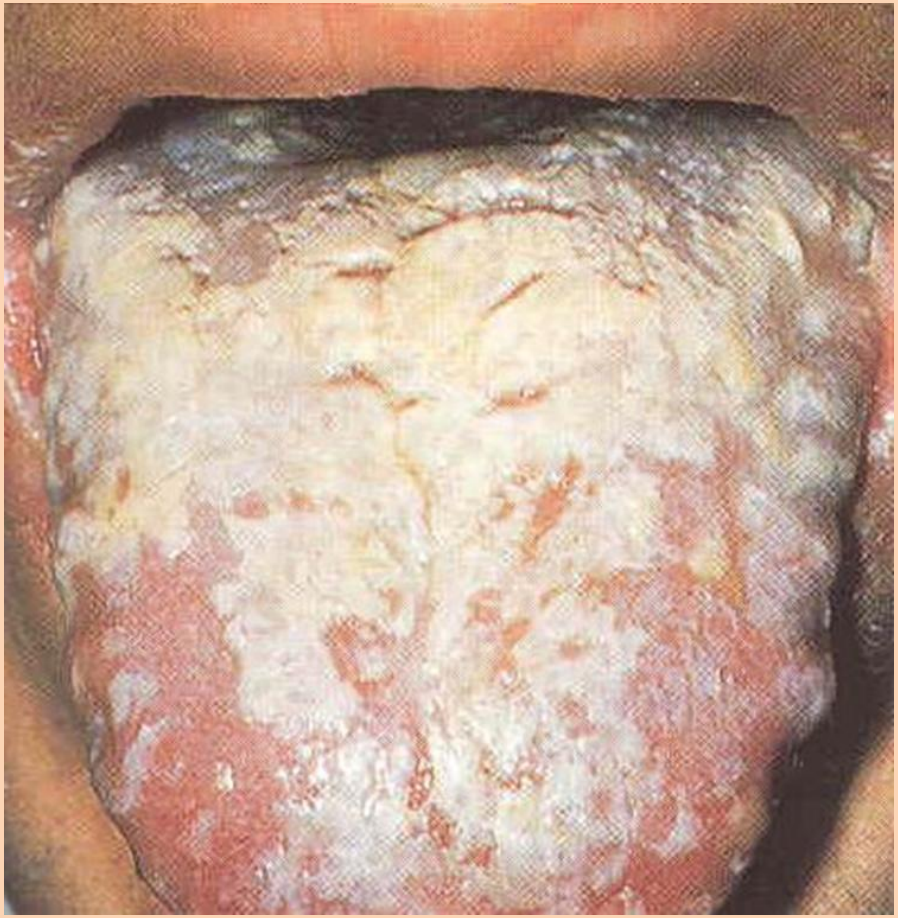
- 1-Mucocutaneous
  - 1-Mucous membrane infections
  - 2-Cutaneous candidiasis syndromes
- 2-Deep organ involvement

Mucous membrane infections

- Oral candidiasis
- Candida esophagitis
- Candida vaginitis
- Gastrointestinal candidiasis

Oral candidiasis

Thrush (Acute pseudomembranous candidiasis)



Extensive oral infection with Candida albicans -HIV

Angular cheilitis (Perleche)

Erythema. Fissure. Avitaminosis

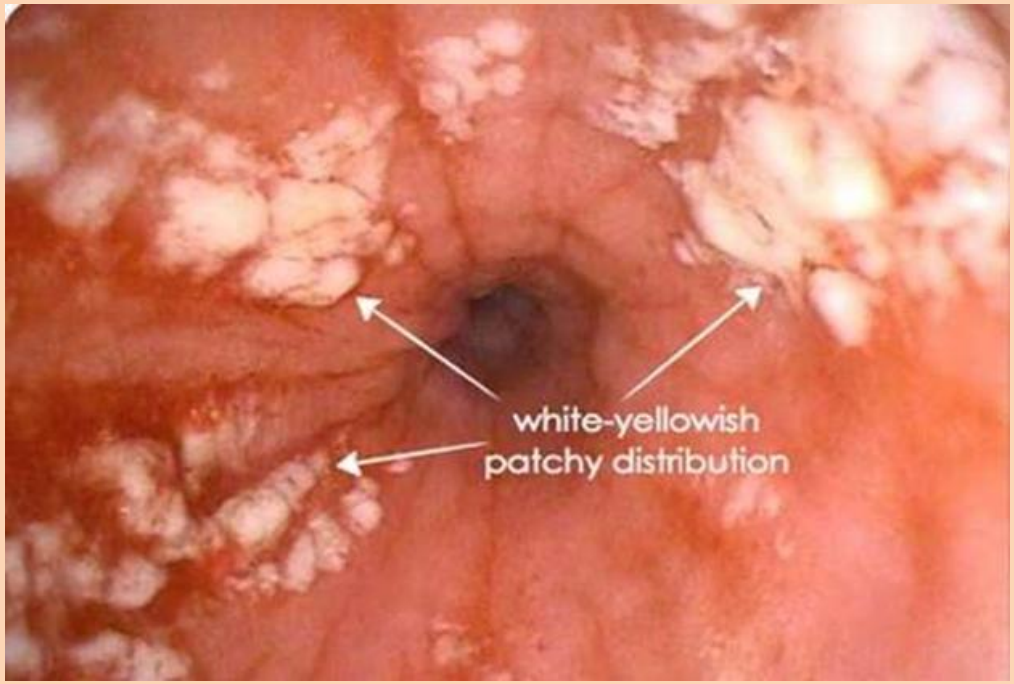
Candida leukoplakia

precancerous

Candida esophagitis

Malignancy of the hematopoietic or lymphatic systems

AIDS



- 1-Mucocutaneous

  1-Mucous membrane infections

  2-Cutaneous candidiasis syndromes

- 2-Deep organ involvement

Candida Intertrigo

(Intertriginous candidiasis):
satellite lesions

Paronychia & Onychomycosis

A) Paronychia

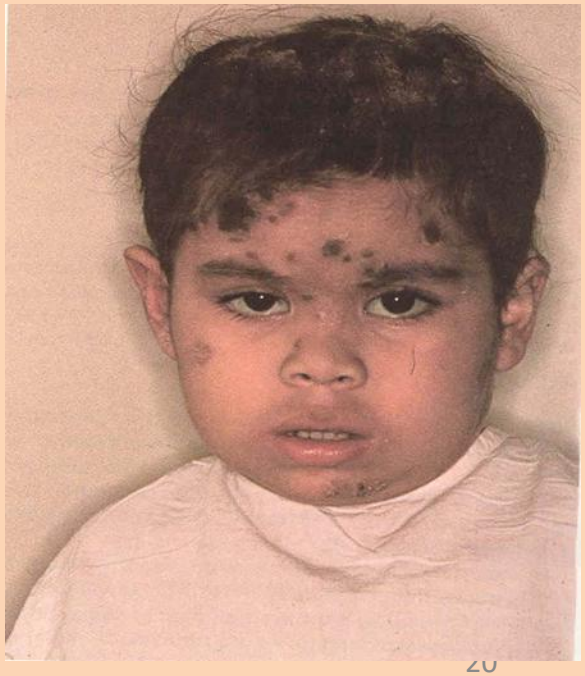
- B) Onycholysis (Onychia)
  Iran (common form)

- Diaper rash

(Candida diaper dermatitis)
Perianal candidiasis

- Chronic Mucocutaneous Candidiasis (CMCC)

Thymus



- 1-Mucocutaneous

  1-Mucous membrane infections

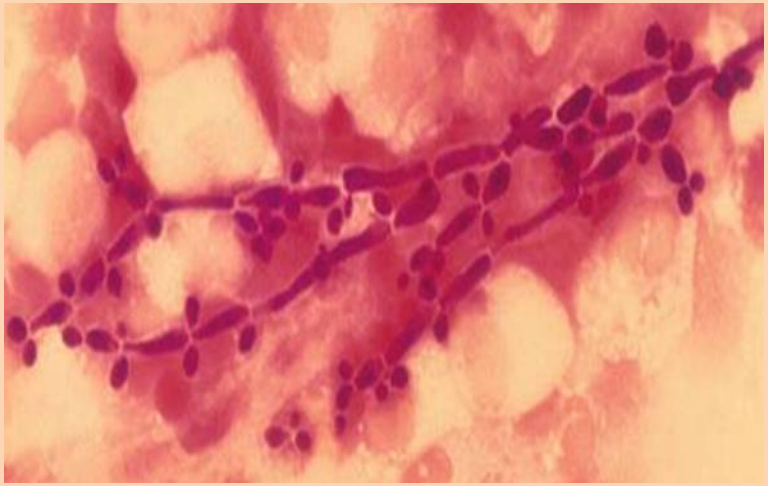
  2-Cutaneous candidiasis syndromes

- 2-Deep organ involvement

- CNS candidiasis
- Respiratory tract candidiasis
- Candida endocarditis
- Urinary tract candidiasis
- Disseminated candidiasis and Candidemia

Diagnosis

- 1. Direct smear
- Sputum, Urine, blood
- (Gram stain), KOH



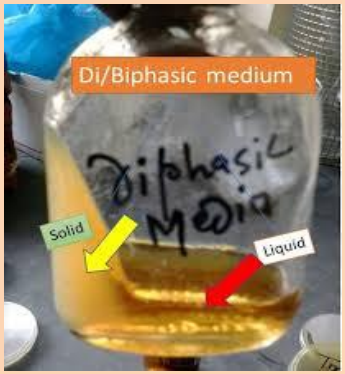
2. Culture:

S, SC, SCC (Mycosel or mycobiotic agar)

Deep-seated candidiasis:

Blood

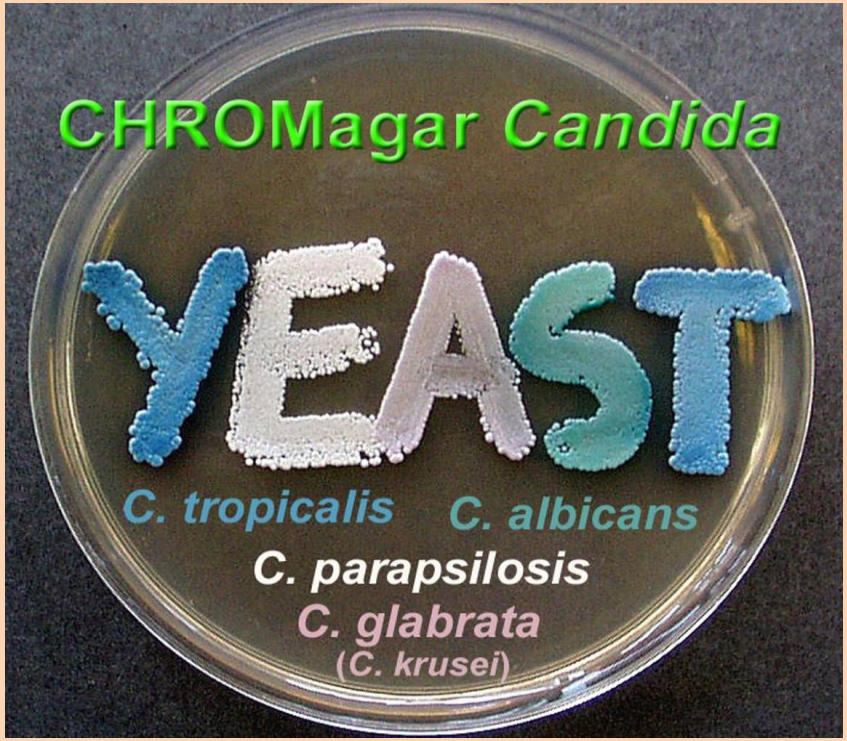
1. Biphasic media



2. BACTEC radiometric system

CHROMagar

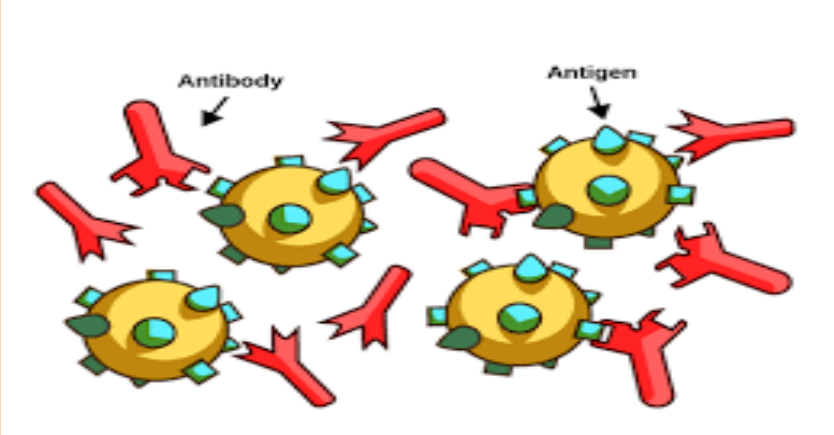
A culture media utilized to rapidly identify many common *Candida* species, employs a colorimetric reaction on special agar that allows distinction among *C. albicans, C. glabrata, C. parapsilosis*, C. tropicalis, and several other non-albicans Candida species.

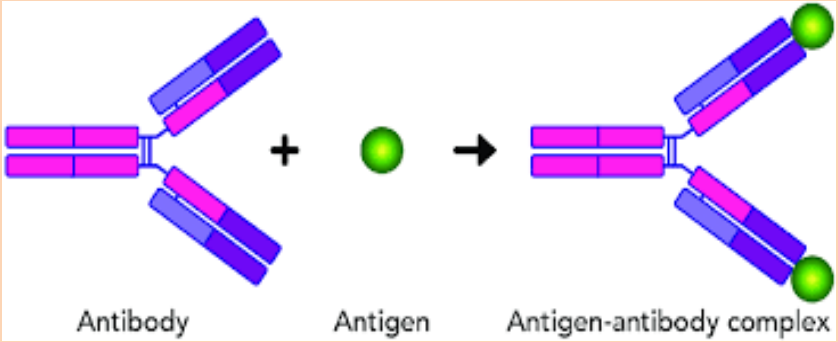


Serology tests

Antigen detection (mannoproteins)

ELISA, RIA, LA





Treatment

Candida infections of the mouth, throat, and esophagus

- The treatment for mild to moderate infections in the mouth or throat is usually an antifungal medicine applied to the inside of the mouth for 7 to 14 days. These medications include **clotrimazole, miconazole,** or **nystatin**.
- For severe infections, the treatment is usually **fluconazole** or another type of antifungal medicine given by mouth or through a vein for people who don't get better after taking fluconazole.
- The treatment for candidiasis in the esophagus is usually **fluconazole**.

Treatment for Vulvovaginal Candidiasis

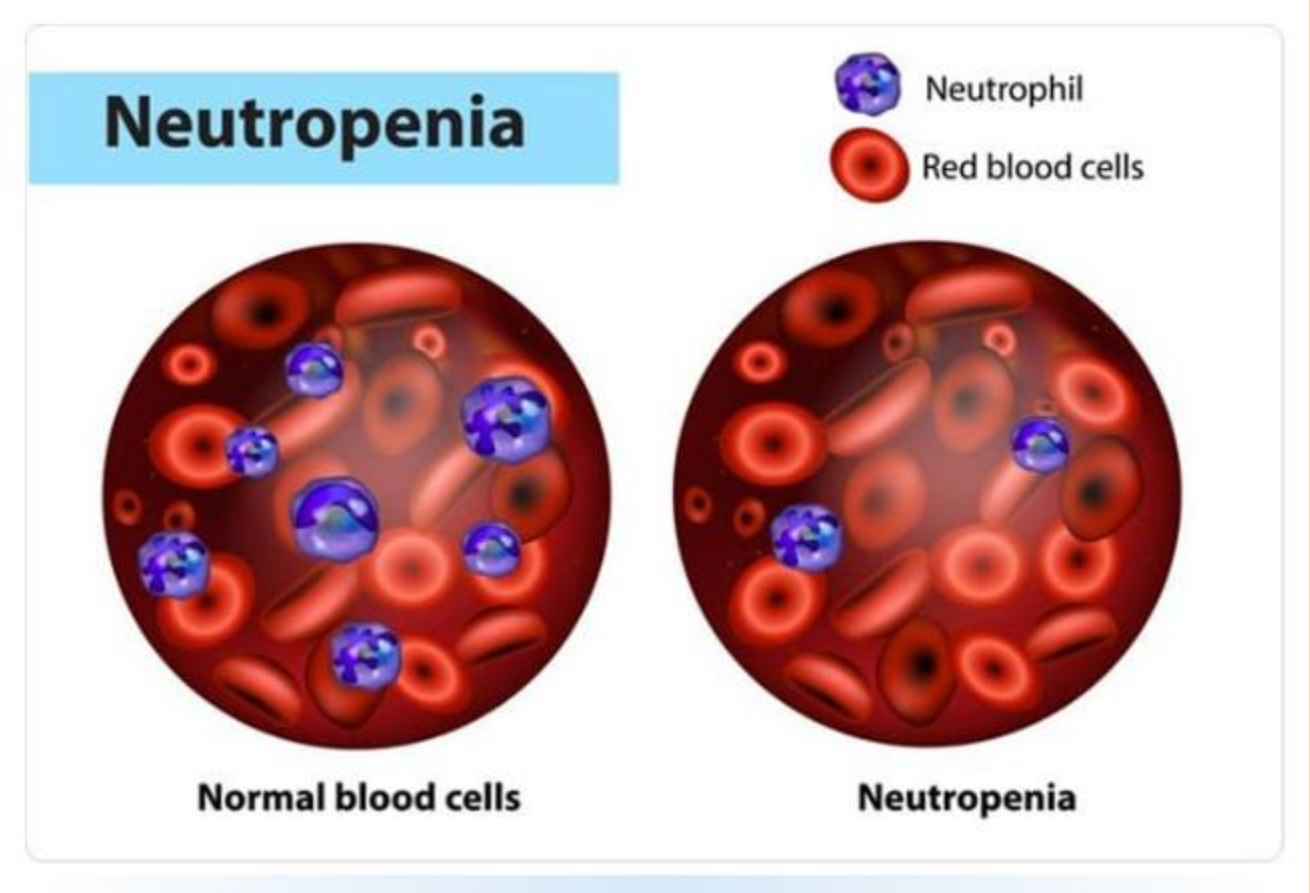
- For most infections, the treatment is an antifungal medicine **applied inside the vagina** or a single dose of **fluconazole** taken by mouth.
- For more severe infections, infections that don't get better, or keep coming back after getting better, other treatments might be needed. These treatments include more doses of **fluconazole** taken by mouth or other medicines applied inside the vagina such as **boric acid, nystatin, or flucytosine**.
- A small percentage (< 5%) of women experience chronic recurrent VVC infections, which often require long-term or prophylactic oral azole therapy for control. In such patients, the recommended regimen includes fluconazole 150 mg every other day for 3 doses, followed by weekly fluconazole 150-200 mg for 6 months.

Treatment for Candidemia and disseminated candidiasis

- In patients without neutropenia, an **echinocandin** is recommended as initial therapy and fluconazole an acceptable alternative in certain circumstances in most cases of candidemia and disseminated candidiasis.

- An echinocandin is recommended for candidemia in most patients with neutropenia. Lipid amphotericin B is an alternative that can be considered. Fluconazole is an alternative in patients who are less critically ill and who have no recent azole exposure. Voriconazole can be used when additional mold coverage is desired.

- A critical component in the management of candidemia and disseminated candidiasis is the removal of the focus of infection, such as intravenous and Foley catheters.



- **Mild neutropenia:** 1,000 – 1,500.
- **Moderate neutropenia:** 500 – 1,000.
- **Severe neutropenia:** Less than 500.

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Designing of eucalyptol nanoemulsion drug delivery system loaded with amphotericin B for *Candida albicans* biofilm control: in vitro and in vivo assessment using the *Galleria mellonella* model

Mahyar Keymaram [a], Ensieh Lotfali [b], Marziyeh Mousazadeh [c], Maryam Nikkhah [c], Omid Raiesi [d e], Mohammad Hossein Yadegari [a]

A Review of Epidemiology and Antifungal Susceptibility of non-Candida albicans species in Iran

Arian Alhani ; Golsa Moshiri ; Ensieh Lotfali

Novelty in Biomedicine, Vol. 13 No. 2 (2025), 19 April 2025, Page 126-133
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Analysis of molecular resistance to azole and echinocandin in *Candida* species in patients with vulvovaginal candidiasis

Ensieh Lotfali [1], Mahzad Erami [2], Mahsa Fattahi [3*], Houshang Nemati [4], Zeinab Ghasemi [5], Elham Mahdavi [6]

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Abstract

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Oral Candidiasis in Hematological Malignancy Patients: Identification and Antifungal Susceptibility Patterns of Isolates

Masoud Mardani [1], Sara Abolghasemi [1], David Darvishnia [1], Ensieh Lotfali [2,*], Reza Ghasemi [3], Mohammad Mahdi Rabiei [3] and Azam Fattahi [4]

Full Text | Scholarly Journal

The Evaluation of 660, 810, and 940nm Laser Wavelengths on Nystatin- Resistant Candida albicans: An In-Vitro Study

Mohammadi, Saeed; Shoorgashti, Reyhaneh; Lotfali, Ensieh; Lesan, Simin; Ebrahimi, Hooman. **Jundishapur Journal of Microbiology; Ahvaz** Vol. 17, Iss. 7, (Jul 2024): 1-9. DOI:10.5812/jjm-144680