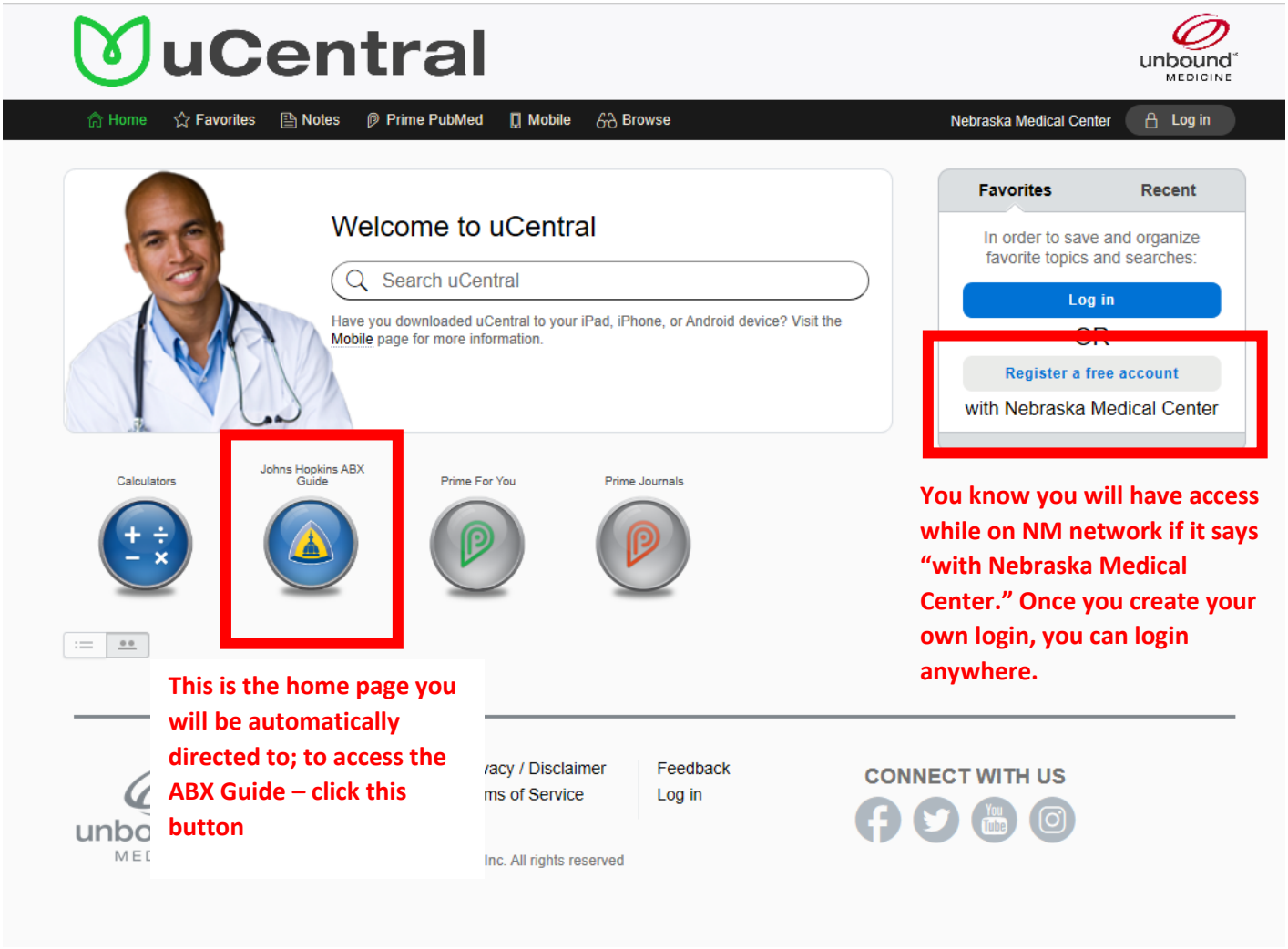
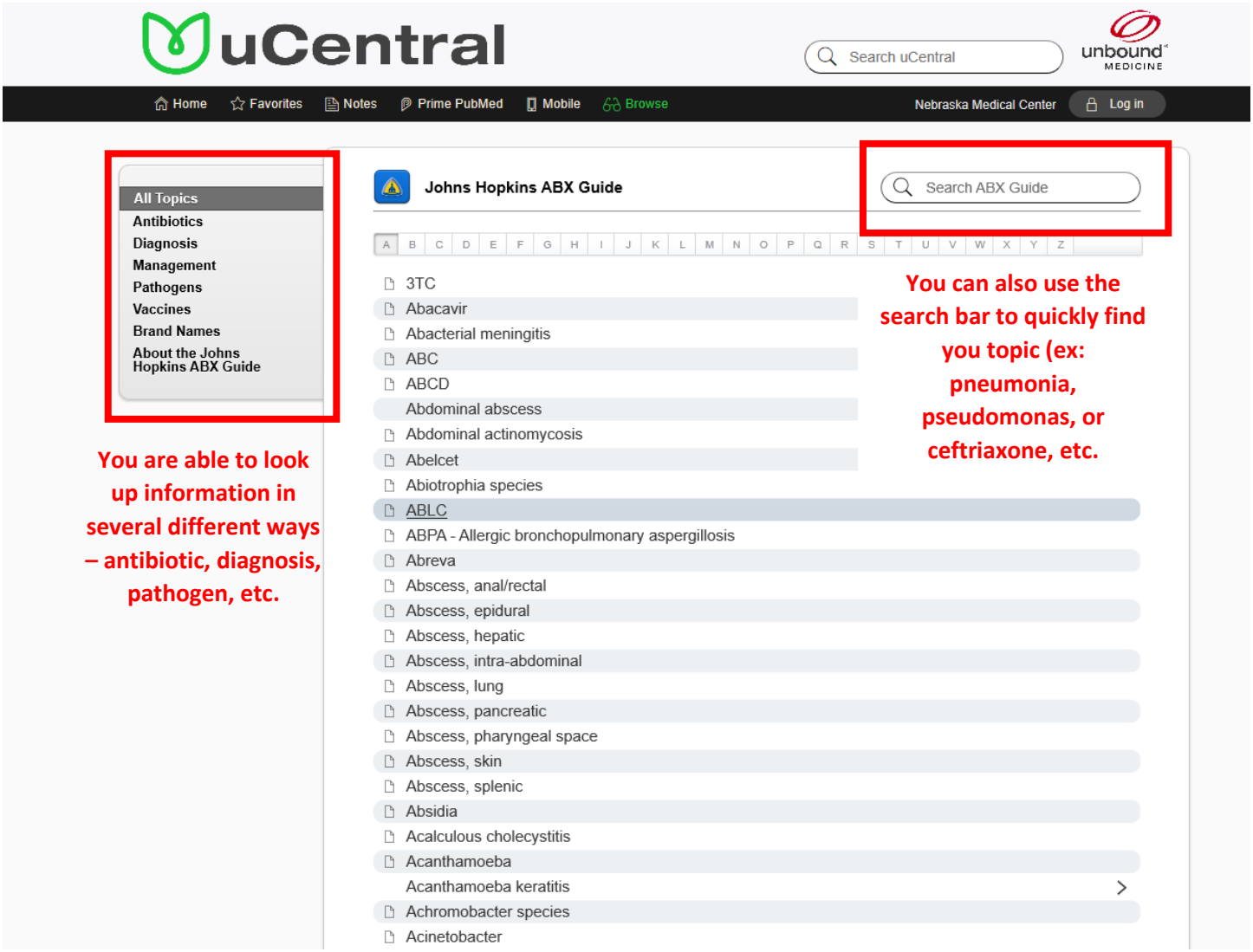
Johns Hopkins ABX Guide

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Brand Names
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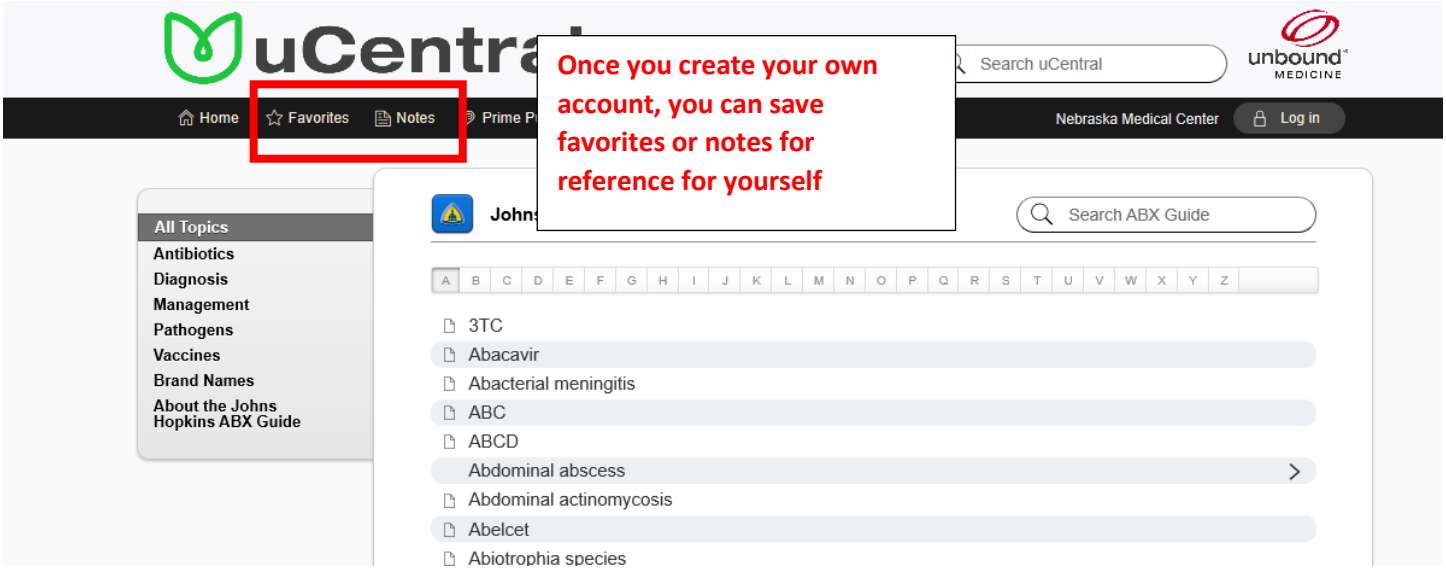
3TC
Abacavir
Abacterial meningitis
ABC
ABCD
Abdominal abscess
Abdominal actinomycosis
Abelcet
Abiotrophia species
ABLC
ABPA - Allergic bronchopulmonary aspergillosis
Abreva
Abscess, anal/rectal
Abscess, epidural
Abscess, hepatic
Abscess, intra-abdominal
Abscess, lung
Abscess, pancreatic
Abscess, pharyngeal space
Abscess, skin
Abscess, splenic
Absidia
Acalculous cholecystitis
Acanthamoeba
Acanthamoeba keratitis
Achromobacter species
Acinetobacter
You can also use the search bar to quickly find you topic (ex: pneumonia, pseudomonas, or ceftriaxone, etc.
You are able to look up information in several different ways – antibiotic, diagnosis, pathogen, etc.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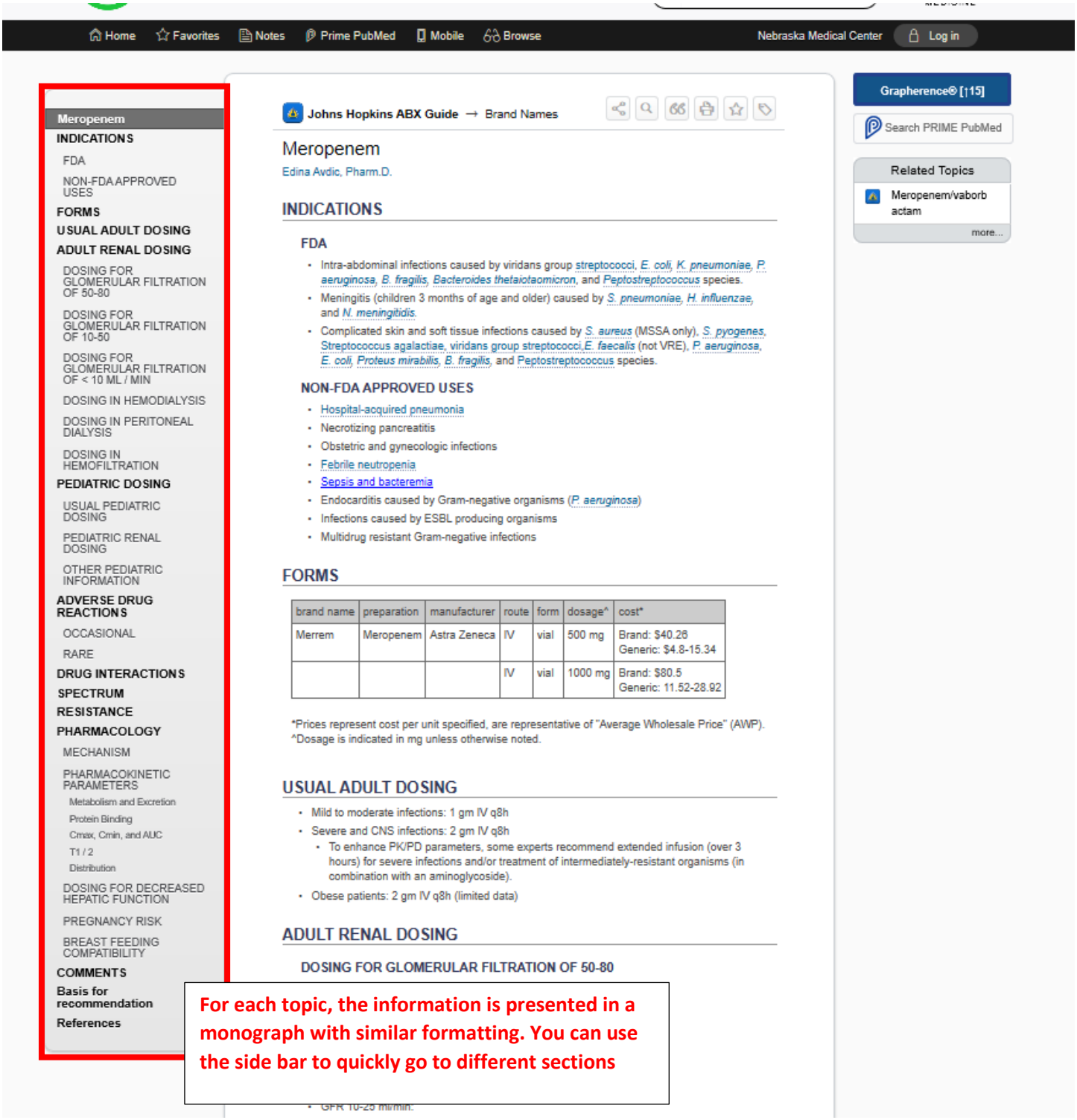
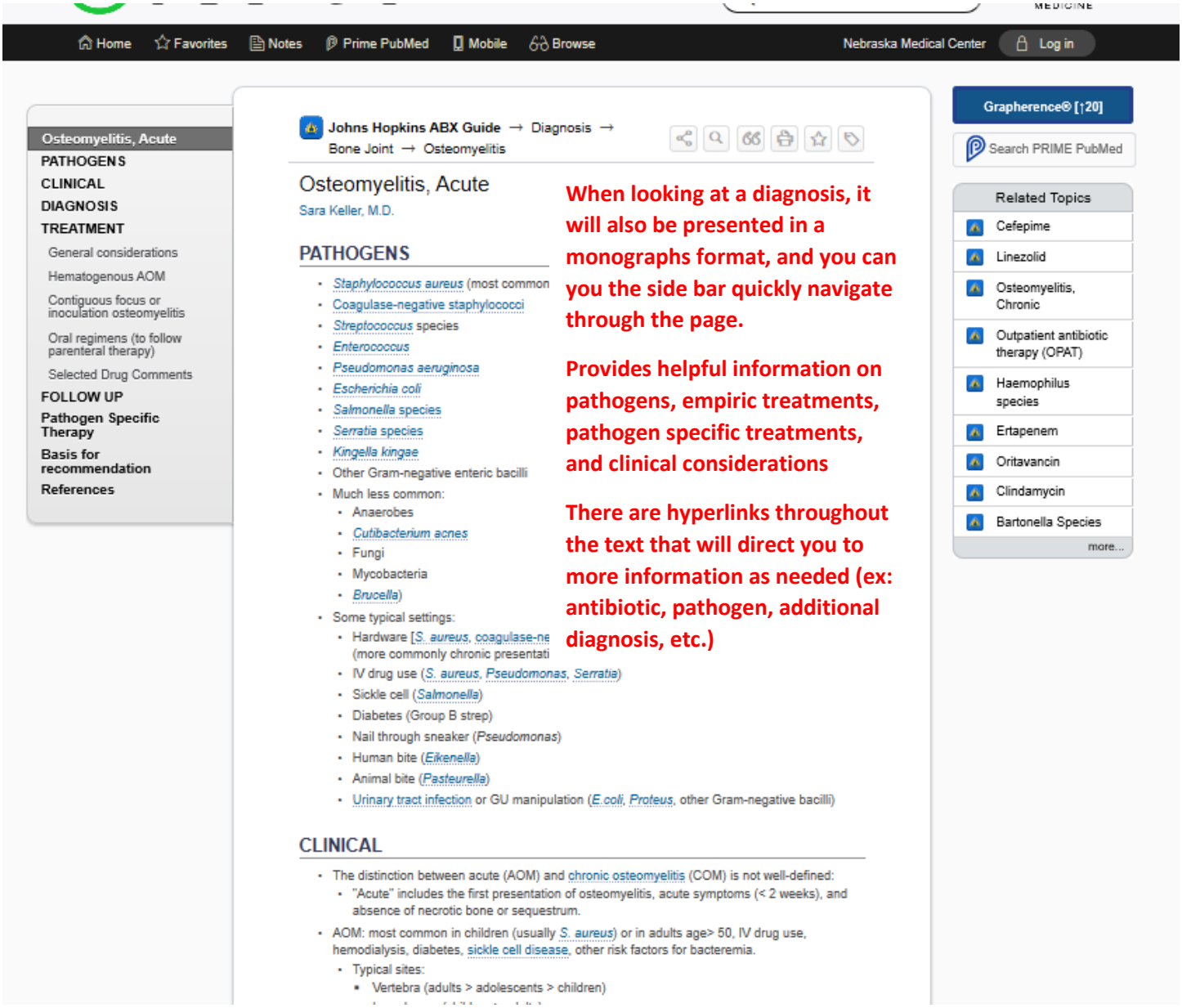
Abiotrophia species

When looking at antibiotic:



When Looking at Diagnosis:



When Looking at Pathogen:

Pseudomonas aeruginosa

Lisa A. Spacek, M.D., Ph.D.

MICROBIOLOGY

- Gram-negative non-fermenting, motile bacillus [Fig 1]; known for blue-green pus due to pyocyanin and pyoverdin pigments.
- Non-fastidious organism; inhabits a variety of environments including soil and water, *i.e.*, hot tubs, sinks, water faucets, respirators, disinfectants, and contact lens cleaning solution.
- Grows on a wide variety of media. Clinical isolates usually render smooth colonies on plates [Fig 2].
- Produces biofilm, toxins, and proteases.
- Drug resistance mechanisms include multiple pathways: chromosomal and inducible beta-lactamases, active efflux pumps, acquired genes and plasmid-mediated ESBLs (TEM, SHV, CTX-M), and altered permeability.[8][13]
  - Carbapenem-resistance mechanisms include:
    - Loss of outer membrane porin D (OprD) results in resistance to carbapenems.
    - The combined loss of OprD in combination with another mechanism, *i.e.*, overexpression of AmpC beta-lactamase OR overexpression of efflux pumps, is a major determinant of resistance to carbapenems.[12]
    - Production of carbapenemases, esp. Ambler class B metallo-beta-lactamases (NDM, VIM, IMP).[4]
  - Clinical utility of rapid molecular diagnostic platforms to detect genotype resistance to beta-lactam/beta-lactamase inhibitor combinations is limited by the complexity of non-tested determinants of beta-lactam resistance, such as OprD changes and drug efflux systems.[3]

CLINICAL

- Usually a nosocomial, opportunistic pathogen--especially in the setting of immunocompromised host or foreign body, central line, or urinary catheter.
  - Chronic colonizer of cystic fibrosis (CF) lung.
  - Agent of pneumonia (ventilator-associated), UTI, bacteremia (neutropenia), post-neurosurgical meningitis, post-surgical infections, and hot-tub folliculitis.
  - Ecthyma gangrenosum: infarcted skin lesions due to vascular invasion with heavy organism burden is uncommon, and seen mostly in immunosuppressed or critically ill patients.
- Risk factors include immunosuppression, diabetes mellitus, skin burns, cystic fibrosis, neutropenia, complement deficiency, and AIDS.
- Multidrug resistance (MDR): likely in those with recent abx therapy (past 90d), hospital stay > 4d, high rate of abx resistance associated with residence in a chronic care facility.[17]
- Historically associated with high mortality in the setting of:
  - Febrile neutropenia, bacteremia, pneumonia, and skin and soft tissue infections
  - Infected burn wounds with heavy bacterial growth in burn eschar

SITES OF INFECTION

- Respiratory: pneumonia (nosocomial, CF, AIDS), lung abscesses
- GU: UTI/pyelonephritis (complicated by the obstruction, manipulation, or foreign body)

Provides helpful clinical information and under microbiology, will give you an easy to understand review of any potential resistance that can be helpful.

Selected Drug Comments

- Cefiderocol is a synthetic conjugate with cephalosporin moiety to inhibit cell wall synthesis PLUS a siderophore moiety to enter cells via active iron transporters.[9]
- Taniborbactam is a next-generation β-lactamase inhibitor with direct inhibitory activity against Ambler class A, B, C, and D enzymes. Combination of cefepime-taniborbactam demonstrates broad-spectrum rescue of cefepime activity against carbapenem-resistant *P. aeruginosa*.[2]

Drug	Recommendation
Amikacin	A traditional second drug used with anti-pseudomonal β-lactams for wider empiric coverage. Renal (reversible) toxicity associated with a greater duration of treatment and higher doses. Monitor for otic (irreversible) toxicity which may be seen with > 3d of therapy. Has had the best susceptibility coverage of typically used aminoglycosides against *P. aeruginosa* at many institutions, although plazomicin may now be the leader.
Aztreonam	Anti-pseudomonal monobactam. Increasing resistance may limit effectiveness.
Cefepime	Fourth-generation cephalosporin with anti-pseudomonal and anti-*S.*

The Selected Drugs Comments Section can provide some helpful information for each potential antibiotic that can help with clinical decision making