



PGTM Clinical Intervention Model (CIM):
Descriptive analysis of antifungal use in Quebec's university teaching hospitals - 2017

Background: Antifungals are frequently used in Quebec's university teaching hospitals (UTHs), and the costs associated with them account for a sizeable portion of hospital budgets. The objective of this study was to identify the indications for which the selected antifungals are prescribed in these hospitals, namely, amphotericin B liposomal, anidulafungin, caspofungin, micafungin, posaconazole and voriconazole, and to provide an overview of their use.

The PGTM's scientific recommendations - ADULT

In light of the results obtained for the adult population, the following recommendations can be made:

- Develop and disseminate antifungal utilization criteria common to all five UTHs, based on the main published guidelines available in 2017, to guide prescribers and harmonize the rules governing the use of antifungals in the UTHs;
- Develop algorithms to be used in all five UTHs to help manage patients on the basis of their clinical condition, primarily for:
 - The treatment of candidiasis
 - Optimize the first-line use of fluconazole because of its efficacy and lower cost.
 - Ensure that choosing caspofungin or micafungin as first-line treatment for candidiasis is necessary.
 - Empirical treatments
- After the criteria and algorithms are put in place, assess, by means of drug utilization reviews (DUR), the clinicians' adherence to these recommendations.
- Ensure that posaconazole as primary prophylaxis is the appropriate choice;
- Ensure that combinations of antifungals are warranted;
- Ensure that the use of IV voriconazole in patients with severe renal failure is warranted and safe (the benefits outweigh the risks);
- Remember to switch from parenteral to oral administration as soon as the patient's clinical condition permits;
- Improve the information available in the patient's chart by providing details in the progress notes, specifically, details on the patient's diagnosis, the therapeutic intent and the choice of therapy.

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The PGTm's scientific recommendations - PEDIATRIC

In light of the results obtained for the pediatric population, the following recommendations can be made:

- Develop and disseminate antifungal utilization criteria common to all five UTHs, based on the main published guidelines available, to guide prescribers and harmonize the rules governing the use of antifungals in the UTHs .
- Develop algorithms common to all five UTHs to help manage patients on the basis of their clinical condition, primarily for:
 - The treatment of candidiasis
 - Optimize the first-line use of fluconazole because of its efficacy and lower cost.
 - Ensure that choosing capsofungin or micafungin as first-line treatment for candidiasis is necessary.
- After the criteria and algorithms are put in place, assess, by means of DUR , clinicians' adherence to these recommendations.
- Conduct a literature search to compare the available pediatric data for capsofungin with those for micafungin in order to select the more appropriate echinocandin for pediatric patients;
- Ensure that combinations of antifungals are warranted;
- Remember to switch from parenteral to oral administration as soon as the patient's clinical condition permits;
- Improve the information available in the patient's chart by providing details in the progress notes, specifically, details on the patient's diagnosis, the therapeutic intent and the choice of antifungal.

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Objective: To promote optimal antifungal use in the UTHs.

Intervention measures: Each institution is to determine which interventions apply to its situation and make one or more of them priorities.

Timetable: Institute applicable measures at each hospital within 12 months, commencing with March 2017.

Intervention plan for the PGTm's antifungal CIM:

1. Joint involvement of the antimicrobial stewardship with a focus on antifungals is recommended throughout the process.
2. Present the results to the Pharmacy and Therapeutics Committee and/or the Antibiotic Therapy Committee, if applicable, and to other committees concerned (e.g., the Oncology Committee), if relevant;
3. Present the local results to the health professionals concerned, in particular, the infectious disease specialists, hematologists/oncologists, intensivists, pharmacists, etc.
4. Jointly with the antimicrobial management programs at the five UTHs, develop antifungal utilization criteria based on the main published guidelines available in 2017, as well as treatment algorithms, primarily for the treatment of candidiasis and the empirical treatment of fungal infections.
5. Update the preprinted prescription forms for antifungals to reflect the new recommendations or create new ones, if this is deemed necessary.
6. Make decision-support tools available to guide clinicians in choosing antifungals.
7. Develop a communication plan for disseminating the recommendations and the tools created to the health professionals.
8. Inform the health professionals of the dose adjustment for IV voriconazole in the presence of renal failure. A note from the pharmacy could be sent to the care team, or a direct intervention (by telephone or in person) could be made in cases involving a patient with severe renal failure during treatment with voriconazole.
9. Develop, together with the five UTHs' antimicrobial management programs, utilization criteria based on the main published guidelines available in 2017 providing justification for antifungal combinations.
10. Raise the health professionals' awareness of the importance of switching from parenteral to oral administration as soon as the patient's condition permits.
11. Raise the health professionals' awareness with the aim of improving the information available in the patient's chart by having them provide details in the progress notes, specifically, details on the patient's diagnosis, the therapeutic intent and the choice of antifungal.
12. In 1 or 2 years, conduct a targeted follow-up study, ideally prospective, aimed at assessing the health professionals' adherence to the recommendations.

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