identification by molecular methods should be employed *(strong recommendation; high-quality evidence)*.

What Is the Diagnostic Value of Nucleic Acid Testing in Clinical Specimens?

Recommendations.

7. There was debate among the committee members regarding the clinical utility of blood-based polymerase chain reaction (PCR) in diagnosing IA, and experts were not in agreement. One group favored recommendations for PCR testing, based on publications validating its role when used in conjunction with other tests such as antigen detection assays to diagnose IA and/or reduce preemptive antifungal usage. The other group thought that PCR assays are promising but could not be recommended for routine use in clinical practice at present due to the lack of conclusive validation for commercially available assays, the variety of methodologies in the literature, and questions about the extent to which results assisted diagnosis.
8. As research in the area continues, we recommend that clinicians choosing to use PCR assays employ them carefully in the management of individual patients on a case-by-case basis. Clinicians should be aware of the methodologies and performance characteristics of the specific assay used, and interpret results accordingly. When PCR assays are used, results should be considered in conjunction with other diagnostic tests and the clinical context *(strong recommendation; moderate-quality evidence)*.

How Should Galactomannan and (1 → 3)-β-D-Glucan Be Used for the Diagnosis of Aspergillosis?

Recommendations.

9. Serum and BAL galactomannan (GM) is recommended as an accurate marker for the diagnosis of IA in adult and pediatric patients when used in certain patient subpopulations (hematologic malignancy, HSCT) *(strong recommendation; high-quality evidence)*.
10. GM is not recommended for routine blood screening in patients receiving mold-active antifungal therapy or prophylaxis, but can be applied to bronchoscopy specimens from those patients *(strong recommendation; high-quality evidence)*.
11. GM is not recommended for screening in SOT recipients or patients with chronic granulomatous disease (CGD) *(strong recommendation; high-quality evidence)*.
12. Serum assays for (1 → 3)-β-D-glucan are recommended for diagnosing IA in high-risk patients (hematologic malignancy, allogeneic HSCT), but are not specific for *Aspergillus (strong recommendation; moderate-quality evidence)*.

What Is the Approach to the Radiographic Diagnosis of Invasive Pulmonary Aspergillosis?

Recommendations.

13. We recommend performing a chest computed tomographic (CT) scan whenever there is a clinical suspicion for IPA regardless of chest radiograph results (*strong recommendation; high-quality evidence)*.
14. Routine use of contrast during a chest CT scan for a suspicion of IPA is not recommended (*strong recommendation; moderate-quality evidence)*. Contrast is recommended when a nodule or a mass is close to a large vessel (*strong recommendation; moderate-quality evidence)*.
15. We suggest a follow-up chest CT scan to assess the response of IPA to treatment after a minimum of 2 weeks of treatment; earlier assessment is indicated if the patient clinically deteriorates (*weak recommendation; low-quality evidence)*. When a nodule is close to a large vessel, more frequent monitoring may be required (*weak recommendation; low-quality evidence)*.

What Is the Role of Bronchoscopy in the Diagnosis of Invasive Pulmonary Aspergillosis?

Recommendation.

16. We recommend performing a bronchoscopy with bronchoalveolar lavage (BAL) in patients with a suspicion of IPA (*strong recommendation; moderate-quality evidence)*. Significant comorbidities such as severe hypoxemia, bleeding, and platelet transfusion-refractory thrombocytopenia may preclude BAL. The yield of BAL is low for peripheral nodular lesions, so percutaneous or endobronchial lung biopsy should be considered. We recommend the use of a standardized BAL procedure and sending the BAL sample for routine culture and cytology as well as non-culture-based methods (eg, GM) (*strong recommendation; moderate-quality evidence)*.

III. What Antifungal Agents Are Available for the Treatment and Prophylaxis of Invasive Aspergillosis, Including Pharmacologic Considerations, and What Is the Role for Susceptibility Testing?

Amphotericin B

Recommendations.

17. Amphotericin B (AmB) deoxycholate and its lipid derivatives are appropriate options for initial and salvage therapy of *Aspergillus* infections when voriconazole cannot be administered. However, AmB deoxycholate should be reserved for use in resource-limited settings in which no alternative agents are available. Lipid formulations of AmB should be considered in settings in which azoles are contraindicated or not tolerated *(strong recommendation; moderate-quality evidence)*.
18. Aerosolized formulations of AmB may be considered as prophylaxis in patients with prolonged neutropenia (patients receiving induction/reinduction therapy for acute leukemia and allogeneic HSCT recipients following conditioning or during treatment of graft-vs-host disease [GVHD]) and in lung transplant recipients *(weak recommendation; low-quality evidence)*.

Echinocandins

Recommendation.

19. Echinocandins are effective in salvage therapy (either alone or in combination) against IA, but we do not