Safe Living Following Solid Organ Transplantation

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KEYWORDS

• Solid organ transplantation • Vaccination • Food safety • Travel advice
• Infection prevention

KEY POINTS

- Infections after transplant can have significant impact on a patient's as well as their organ's survival. Several strategies can be used to minimize risk of acquisition of such infections.
- Vaccination against viral and bacterial illnesses, carefully timed preferably pretransplant, as well as safe living strategies posttransplant can afford protection against infections.
- Careful assessment pretransplant combined with a strategy of ongoing patient education pretransplant and posttransplant can assist patients with maintaining their health.

INTRODUCTION

Living safely after organ transplantation requires an integrated care continuum that starts before transplant and ideally even before the development of end organ disease. In order to minimize a solid organ transplant (SOT) recipient's risk for infection and risk for injury, it is important to anticipate the risks after transplantation inherent in living. These risks include potential exposure to others with viral or bacterial illness, to food and water sources, participation in recreational activities, resuming sexual activity, living with pets, and opportunities for travel, especially internationally. It is invaluable to orient potential SOT recipients to these risks, because often leading up to transplant they may likely experience debilitation and significant handicaps due to chronic illness. After SOT, once they overcome the preceding debilitation and surgical effects, they, despite chronic immunosuppression, can go on to live healthy, fruitful lives, which they may not have been able to fully conceive of while debilitated. Thus, in anticipation of SOT, potential transplant recipients should update their vaccinations. Potential recipients need to be made aware of food and water safety important after transplant so they may plan accordingly. In addition, potential recipients

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should be educated as to the risks of pet ownership and animal exposure, again to plan accordingly. Finally, realistic expectations should be set with regard to travel and participation in recreational activities especially within the first year after transplant, the period during which they are at increased risk of infection.[1] The American Society for Transplantation Infectious Diseases Community of Practice has previously set forth informal guidance on strategies for living safely after SOT.[2] The investigators astutely note that, unlike Centers for Disease Control and Prevention (CDC) guidelines set forth in other populations such as hematologic stem cell transplant recipients[3] and those infected with human immunodeficiency virus,[4] no such evidence-based guidance exists for the SOT population. That said, the data available for these groups and other immunocompromised populations can be extrapolated to provide guidance, understanding that this guidance may require tailoring based on an individual patient's situation.[2]

STRATEGIES TO PREVENT INFECTION

Vaccination

Posttransplant infections can have a major effect on a patient's as well as their allograft's survival; thus strategies aimed at preventing infections are likely to have significant impact.[5] One such strategy is vaccination (please see Dr Christian Donato-Santana and Nicole M. Theodoropoulos' article, "Immunization of Solid Organ Transplant Candidates & Recipients: A 2018 Update," in this issue for more details). Although inactivated vaccinations have been demonstrated safe after SOT, so too are these vaccines safe in end-stage liver disease (ESLD) and end-stage renal disease (ESRD), and antibody titer response after vaccination is higher pretransplant.[6–12] Viral infections, such as measles virus and varicella zoster virus that can be prevented by live-attenuated vaccine, can have significant morbidity and mortality after SOT.[13] Varicella disease in the immunocompromised host can lead to severe complications.[14,15] Measles outbreaks unfortunately continue to occur in the present day, and measles in an immunocompromised host can cause pneumonitis and encephalitis and has been associated with high mortality.[16]

Live-attenuated vaccines are not recommended posttransplant; thus, identifying those susceptible hosts pretransplant and vaccinating them are paramount in avoiding devastating consequences of infection in an SOT recipient. Most transplant centers have procedures in place to identify these susceptible patients via pretransplant serologies, and every effort is made to ensure vaccination occurs before transplant with intervals as prescribed by the Advisory Committee of Immunization Practices (ACIP). Two other vaccine-preventable diseases that are more common than measles require attention: influenza and *Streptococcus pneumoniae*. Because invasive pneumococcal disease can have substantial morbidity and mortality in SOT recipients and in those with chronic lung, heart, renal, and liver disease, the ACIP recommends vaccination with PCV13 followed by PPSV23. Furthermore, there are few contraindications to influenza vaccine in these populations, especially given the severe pulmonary and extrapulmonary complications associated with infection.[5] Live-attenuated influenza vaccine should be avoided posttransplant both in the SOT recipient and, if at all possible, in their household contacts.[17]

In general, in anticipation for SOT, vaccination should occur as soon as possible to afford protection to those with chronic heart, lung, renal, and liver disease but also because live-attenuated vaccinations should not be administered after transplant. Realistically, however, this is not always possible because in those with critical illness, there may not be time to complete vaccination series before transplant. However,