

Modus V™

Robotic Digital Microscope and PPE



In response to the COVID-19 pandemic, we have seen changes in the recommendations and use of Personal Protective Equipment (PPE) in surgical procedures to increase protection of both the patient and surgical team. Some hospitals and associations as well as The Centers for Disease Control and Prevention (CDC) are recommending additional infection control such as the use of N95 series Filtering Facepiece Respirators, goggles or face shields, Power Air Purifying Respirators (PAPR), full-face air-purifying respirators, or surgical hoods with face shields.^{1,2,3,4,5,6}

Modus V's heads-up and automated features allow users more flexibility and hands-free control, and permit users to maintain a greater distance from each other and the microscope when compared with a traditional surgical microscope. This can help with adherence to these recommendations to reduce impact to surgical setup, while still achieving the visualization required for microsurgery.

Eliminate Binocular Viewing

With the ability to operate heads up, Modus V's digital monitor gives the surgeon and the entire surgical team optimal visualization and a clear line of sight, dramatically improving the surgical workflow

Hands-free Control

Automatically control the system settings from within the sterile surgical field using voice control and navigated tool alignment for an uninhibited surgical workflow

Considerations for Protective Equipment Selection in Healthcare

Patients that present with neurological emergencies will not be able to be tested for COVID-19 before intervention.⁴ Additionally, the false negative rate for swab tests have been reported as significant and up to 87% of patients are reported to be asymptomatic carriers, which has led some institutions to assume all patients are COVID-19 positive and to universally adopt procedures to reduce risk of transmission.⁶

The CDC recommends all healthcare personnel should wear an N95 or higher-level respirator such as disposable filtering facepiece respirators, PAPRs, and elastomeric respirators, as well as eye protection for aerosol generating procedures.¹ Additionally, in areas of high prevalence of COVID-19 or during surgery for patients who have not been confirmed COVID-19 negative, the International Consensus Group and Research Committee of the American Association of Hip and Knee Surgeons recommend that a mask and face shield or alternate protective eyewear be worn.⁵



Why protection is important in surgery

Many surgeries require power tools, hammers, irrigation, electrocautery, or other implements which can aerosolize blood, bone, Cerebrospinal Fluid (CSF), or brain and could facilitate the virus' transmission.^{3,6} There is evidence that the virus can invade the blood, brain, and CSF, and as such should be treated as potentially infectious.⁶ Recognizing the risks of exposure and mitigating them should improve the safety of surgical procedures.⁶

Summary

Exoscopic visualization should allow surgeons to wear varied forms of PPE, while still being able to see the surgical field using a heads-up display. In addition to the advantages of compatibility with PPE, heads up displays allow for surgeons to maintain a larger distance from each other, while still allowing everyone in the room to see the surgical site. Further, automated control of the system using voice and tracked instruments allows surgeons to reduce manual contact with the microscope. These advantages may enable surgeons to be compliant with any new PPE regulations that come into effect, while maintaining their safety and the safety of their patients.

References

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3. Bloomberg., Why Surgeons Don't Want to Operate Right Now. 2020. <https://www.bloomberg.com/opinion/articles/2020-03-24/the-coronavirus-crisis-is-putting-surgeons-at-risk-too>.
4. Pandey et al., Letter: Considerations for Performing Emergent Neurointerventional Procedures in a COVID-19 Environment. 2020. Neurosurgery.
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