Q2 WHICH OF THE FOLLOWING IS NOT TRUE ABOUT BUTTONHOLE CANNULATION?
A. It is the recommended route of cannulation for home hemodialysis
B. Requires a nearly exact cannulation angle and route every time
C. It carries an increased risk of infection
D. It requires removal of a surface-level scab prior to cannulation

The correct answer is A.

In general, buttonhole cannulation is not recommended for home hemodialysis (as a matter of fact it is not recommended for hemodialysis in general). Buttonhole cannulation is created by using a sharp needle repeated though an exact site and route. Over time, this will create a specific tract for a blunt needle to travel. The purpose of a buttonhole is to reduce pain, make cannulation easier, and reduce hematoma formation. Same-site cannulation leaves a scabbed-over area at the site. Before cannulation of this buttonhole site, the scab must be completely removed. Incomplete removal of the scab can increase the risk of local or systemic infection resulted by cannulation. An observational cohort study in 2010 by Van Eps et. al. studied infectious events in patients doing nocturnal and conventional hemodialysis. When nocturnal hemodialysis and buttonhole cannulation technique were used simultaneously, there was a demonstrated increased risk of *septic* dialysis access events with an incidence rate ratio 3.0. In addition, another observational cohort study in 2015 by Weinhandl et. al. showed an increased risk of infection in patients with daily home hemodialysis vs thrice-weekly in-center hemodialysis. This finding is likely related to the more frequent cannulation in daily dialysis. For this reason, buttonhole cannulation in home hemodialysis may have an even more augmented risk due to the nature of buttonhole cannulation and its more frequent need for cannulation.

Of note, a study from 2018 by Nesrallah showed that the use of topical mupirocin on buttonholes after hemostasis was associated with a 6-fold decreased in S. aureus bacteremia.

Additional reading:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8809277/pdf/KID.0001022020.pdf

https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1542-4758.2010.00463.x

https://www.sciencedirect.com/science/article/abs/pii/S0272638614009731

https://journals.lww.com/CJASN/Fulltext/2010/06000/Staphylococcus_aureus_Bacteremia_and_Buttonhole.15.aspx