OP-13

DOI: 10.14232/syrptbrs.2023.35

Antimicrobial film coated catheters for intravesical drug delivery: factors affecting and future opportunities applying the quality by design concepts

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Over the years, catheter-associated urinary tract infections (CAUTI) have been one of the most common nosocomial infections and can also lead to several other complications. In this case, antimicrobial-coated catheters were developed, offering great potential for the prevention of catheter-related urinary tract infections and other complications. Intravesical drug delivery can treat CAUTI by introducing drugs directly into the bladder via a catheter. [1]

Although these new solutions exist for the intravesical delivery of drugs via antimicrobial film-coated catheters, some problems still exist in their treatment. Current urinary catheters are consistently failing to prevent or treat several issues such as - physical risks (CAUTI, sepsis and bladder cancer), lifestyle restrictions (restriction of clothing or daily activities) or psychological factors (changes in self-esteem and confusion). Catheter users must be kept at the centre of innovation, and any advances that can change clinical practice must consider biology, psychology and economics in addition to technology and physics.[2]

Therefore, it is very important to understand the general design constraints and their associated implications for the patients, to gain insight into future innovations.[3] To achieve our goal and to solve unmet clinical need, it is a must to address these issues by understanding the factors that affect catheter performance and the concept of quality by design to overcome these issues and provide better quality care to patients.

References:

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