[0005] Despite these procedural solutions, the incidence of retained guidewires continue to rise due to the following reasons: insufficient training and education; lack of confidence; poor technique; lack of awareness of CVC insertion complications among the residents; insufficient supervision and lack of reminders. In other words, procedural solutions are largely dependent on human factors, which may introduce many uncertainties to guarantee success.

[0006] On the other hand, current solutions include introducing new technological products to prevent the retention of guidewire. However, such products introduce additional procedures, inaccessibility and inconvenience and still rely on the user to achieve the desired result.

[0007] Accordingly, a need exists to provide a guidewire management device that seeks to address some of the above problems.

SUMMARY

[0008] According to a first aspect of the present invention, there is provided a guidewire management device comprising: a housing through which a lumen of a catheter passes; and a locking mechanism mounted within the housing; wherein the locking mechanism is configured to lock the housing if a guidewire is present in the lumen and to unlock the housing if the guidewire is absent from the lumen. The locking mechanism comprises a lever structure comprising a first arm connected to a second arm, wherein the first arm is configured to abut the lumen and the second arm is configured to be actuated by the first arm.

[0009] In an embodiment, the housing is configured to enclose suture wings of the catheter when the housing is locked.

[0010]

[0011] In an embodiment, the first arm is displaceable from a first position to a second position if the guidewire is inserted through the lumen, the first arm actuating the second arm to engage with a latch member to lock the housing.

[0012] In an embodiment, the first arm is displaceable from the second position to the first position if the guidewire is removed from the lumen, the first arm actuating the second arm to disengage from the latch member to unlock the housing.

[0013] In an embodiment, the device further comprises a guidewire holder connectable to an end of the lumen, wherein the guidewire holder comprises an elongated tube configured to receive an end of the guidewire.

[0014] In an embodiment, the guidewire holder comprises a body comprising a curved track, and wherein the elongated tube is disposed along the curved track.

[0015] In an embodiment, the body further comprises a depression configured to receive a thumb of a user, wherein at least a portion of the curved track is disposed in the depression.

[0016] According to a second aspect of the present invention, there is provided a method of manufacturing a guidewire management device, the method comprising: forming a housing having a channel for receiving a lumen of a catheter; and mounting a locking mechanism within the housing such that the locking mechanism locks the housing if a guidewire is present in the lumen and unlocks the housing if the guidewire is absent from the lumen. The locking mechanism comprises a lever structure comprising a first arm connected to a second arm, wherein the second arm is configured to be actuated by the first arm, and wherein mounting the locking mechanism comprises disposing the first arm to abut the lumen.

[0017] In an embodiment, forming the housing further comprises forming an enclosure for enclosing suture wings of the catheter when the housing is locked.

[0018]

[0019] In an embodiment, the method further comprises connecting a guidewire holder to an end of the lumen, wherein the guidewire holder comprises an elongated tube configured to receive an end of the guidewire.

[0020] In an embodiment, the method further comprises forming a body of the guidewire holder, the body having a curved track, and disposing the elongated tube along the curved track.

[0021] In an embodiment, the method of forming the body further comprises forming a depression for receiving a thumb of a user, wherein disposing at least a portion of the curved track in the depression.

[0022] There is also disclosed a guidewire management method comprising: providing the device as claimed in the first aspect; inserting a guidewire through a lumen of a catheter, the lumen passing through the housing of the device, until the guidewire reaches a predetermined depth; advancing the catheter relative to the guidewire while holding the end of the guidewire using the holder; and after the catheter reaches a predetermined position, withdrawing the guidewire from the lumen using the holder.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] Embodiments of the invention will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, in which:

[0024] Fig. 1 shows a perspective view of a guidewire management device, according to an example embodiment.

[0025] Fig. 2A shows a perspective view of the housing of Fig. 1 in an opened and unlocked state, according to an example embodiment.

[0026] Fig. 2B shows a perspective view of the housing of Fig. 2A with its components disassembled.

[0027] Fig. 3 shows a side view of a lever structure, according to an example embodiment.

[0028] Fig. 4A and 4B show a cross-sectional view of the locking mechanism in an unlocked and locked position respectively, according to an example embodiment.

[0029] Figs. 4C and 4D show a side view to calculate the angle of displacement of the lever structure, according to an example embodiment.

[0030] Figs. 5A and 5B show a plan view of the guidewire holder, according to an example embodiment.

CLAIMS

1. A guidewire management device comprising:

a housing through which a lumen of a catheter passes; and

a locking mechanism mounted within the housing;

wherein the locking mechanism is configured to lock the housing if a guidewire is present in the lumen and to unlock the housing if the guidewire is absent from the lumen; and

wherein the locking mechanism comprises a lever structure comprising a first arm connected to a second arm, wherein the first arm is configured to abut the lumen and the second arm is configured to be actuated by the first arm.

2. The guidewire management device as claimed in claim 1, wherein the housing is configured to enclose suture wings of the catheter when the housing is locked.

3. The guidewire management device as claimed in claim 1 or 2, wherein the first arm is displaceable from a first position to a second position if the guidewire is inserted through the lumen, the first arm actuating the second arm to engage with a latch member to lock the housing.

4. The guidewire management device as claimed in claim 3, wherein the first arm is displaceable from the second position to the first position if the guidewire is removed from the lumen, the first arm actuating the second arm to disengage from the latch member to unlock the housing.

5. The guidewire management device as claimed in any one of the preceding claims, further comprising a guidewire holder connectable to an end of the lumen, wherein the guidewire holder comprises an elongated tube configured to receive an end of the guidewire.

6. The guidewire management device as claimed in claim 5, wherein the guidewire holder comprises a body comprising a curved track, and wherein the elongated tube is disposed along the curved track.

7. The guidewire management device as claimed in claim 6, wherein the body further comprises a depression configured to receive a thumb of a user, wherein at least a portion of the curved track is disposed in the depression.

8. A method of manufacturing a guidewire management device, the method comprising:

forming a housing having a channel for receiving a lumen of a catheter; and

mounting a locking mechanism within the housing such that the locking mechanism locks the housing if a guidewire is present in the lumen and unlocks the housing if the guidewire is absent from the lumen,

wherein the locking mechanism comprises a lever structure comprising a first arm connected to a second arm, wherein the second arm is configured to be actuated by the first arm, and wherein mounting the locking mechanism comprises disposing the first arm to abut the lumen.

9. The method as claimed in claim 8, wherein forming the housing further comprises forming an enclosure for enclosing suture wings of the catheter when the housing is locked.

10. The method as claimed in claim 8 or 9, further comprising connecting a guidewire holder to an end of the lumen, wherein the guidewire holder comprises an elongated tube configured to receive an end of the guidewire.

11. The method as claimed in claim 10, further comprising forming a body of the guidewire holder, the body having a curved track, and disposing the elongated tube along the curved track.

12. The method as claimed in claim 11, wherein forming the body further comprises forming a depression for receiving a thumb of a user, wherein disposing at least a portion of the curved track in the depression.