# Costing update report of MTG34: SecurAcath for securing percutaneous catheters

This medical technology guidance was published in June 2017.

All medical technology guidance is reviewed 3 years after publication according to the process described in the MTEP Interim addendum on guidance reviews.

This report is part of the information considered in the guidance review. It describes an update of the cost model so that it reflects any new relevant information including revising the cost and resource parameters to current values. The results from the updated cost model are used to estimate the current savings associated with the use of the technology.


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# 1. Background

The original *de novo* cost model was a decision tree developed by the company (Interrad Medical Inc.) written in Excel, comparing SecurAcath with an adhesive device for securement of peripherally inserted central venous catheter (PICC), and comparing SecurAcath with sutures for central venous catheter (CVC) lines [KiTEC EAC, 2016]. The EAC found the model shell used by the sponsor difficult to follow and so rebuilt the model in a separate Excel workbook, comparing SecurAcath with StatLock (which reported the only available RCT evidence) and sutures. Three time horizons for both CVC and PICC lines were included: 5, 25 and 120 days. These assumptions informed the cost of cleaning and maintaining securement over the lifetime of the placement of each technology.

Key clinical parameters in the KiTEC EAC base-case economic model, included:

- placement time;
- maintenance time;
- risk of needlestick injury at time of placement of catheter (for CVC lines, sutures arm only).

KiTEC EAC concluded that there was insufficient evidence to suggest that SecurAcath was clinically superior in effectiveness and adverse events to StatLock, and removed rates of migration, dislodgment, occlusion and CRBSI rates from all arms of the base case scenarios [KiTEC EAC, 2016].

KiTEC EAC concluded that for short indwell times StatLock was the lowest cost option. For medium or long indwell times SecurAcath was cheaper than StatLock for securing PICC lines, but sutures were the cheapest option for securing CVC lines [KiTEC EAC, 2016]. The savings were driven by a reduced need for replacement devices as well as significantly shorter maintenance times [Macmillan et al. 2018].

The objective of this report is to produce a cost model update for the Medical Technology Guidance: SecurAcath for securing percutaneous catheters [MTG34] which was published in June 2017. In order to achieve this objective, the Newcastle EAC has reviewed the model and updated relevant parameters impacted by revised cost values only. For the purposes of these cost updates, no review of clinical effectiveness has taken place, and none of the clinical assumptions described above have been altered.

## 2. Current validity of model

Collated Expert Advice Questionnaires summarising responses from 3 experts during the review process, confirms that the care and clinical pathway are unchanged since the original assessment.

All three experts state the potential of SecurAcath to prevent catheter migration and/or malposition.

One expert states that SecurAcath is unsuitable in patients with an allergy to Nickel; this outcome was not included in the company economic model. The proportion of patients requiring a PICC line with a nickel allergy is unclear, and therefore nickel allergy was not included in this costing update.

A number of studies (published after the assessment report) were identified by the company, experts and Newcastle EAC (please note that these were not identified from a systematic search, therefore there may be other relevant studies, and these identified papers have not been formally reviewed nor critically appraised by the Newcastle EAC):

- An observational study of the securement of central venous access device with a subcutaneous anchor device in a paediatric population at a tertiary level hospital (Fitzsimmons et al. 2020).
- Intravascular catheter migration: A cross-sectional and health-economic comparison of adhesive and subcutaneous engineered stabilisation devices for intravascular device securement (McParlan et al. 2020).
- GAVeCeLT-WoCoVA Consensus on subcutaneously anchored securement devices for the securement of venous catheters: Current evidence and recommendations for future research (Pinelli et al. 2020).
- SecurAstaP trial: securement with SecurAcath versus StatLock for peripherally inserted central catheters, a randomised open trial (Gooseens et al. 2018).
- Evaluating safety, efficacy, and cost-effectiveness of PICC securement by subcutaneously anchored stabilization device. (Zerla et al. 2017).

Two of the above studies reported on economic data (McParlin et al. 2020; Zerla et al. 2017):

- Zerla et al. (2017) was a single centre (Italy) observational study over a 1 year period (Sept 2014-Sept 2015) including 30 adult cancer patients with SecurAcath placed to secure PICC lines . Patients were followed

until Jan 2016 (total of 4963 patient days). A cost comparison of SecurAcath against adhesive stabilisation was made assuming the same maintenance costs per model arm. The authors demonstrated a total cost saving of 3354 Euros (112 Euros per patient) based on differences in the total number of devices used. However, it is unclear if the adhesive stabilisation model arm was derived from a retrospective cohort, matched controls, or from the literature (not clearly reported). Mean dwell time was 4.8 months in this population (range 9 days to 13 months).

- McParlin et al. (2020) was a single centre (Belfast) before and after analysis in oncology/haematology patients comparing 1 year of PICC lines inserted using adhesive (2013, n=1111), and 1 year of PICC lines inserted using SecurAcath (2015, after 6 months training, n=1139). A mean cost saving of £74 per patient was reported by averaging total material costs across all patients (due to variability in therapy and overall dwell times). Mean dwell time was 6 months in this population.

## 3. Updated input parameters

The KiTEC EAC base-case cost model was revised, Table 1, to incorporate:

- Change in technology price of SecurAcath (from company correspondence),
- Decrease in technology price of Adhesive comparators (from NHS Supply Chain),
- Decrease in nurse time unit costs (using costs from PSSRU Unit Costs of Health & Social Care 2019/20)
- All additional costs not readily available were taken from the original KiTEC EAC assessment report (2016) and inflated to 2020 prices using Consumer Price Index (Office of National Statistics – Table 9 L528 Health; published online 17/02/2021, next update due 24/03/2021).

Note that an error was identified in the original economic model. The economic model was corrected by KiTEC EAC during the review, to account for the weekly replacement of StatLock devices.

Table 1: Updated cost parameters

| Variable | Base-case (original submission) | Updated (Newcastle EAC) [source] |
|---|---|---|
| SecurAcath | £16.00 [Amended to £20.00 in final guidance] | £18.00 [MedTech Mandate Funding from 5th April 2021] |
| Adhesive | £3.47 | [redacted] [NHS Supply Chain with VAT excluded, average unit price [redacted]] |
| Sutures | £5.00 | £5.51 [Derivation from company report, original cost inflated] |
| Nurse cost per minute | £2.08 | £0.83 [PSSRU, Unit Costs of Health & Social Care 2019/20, band 6 nurse, £50 per hour] |
| Migration of PICC | £133.62 | £147.22 with standard error of £19.79 [KiTEC EAC Assessment report 2016, inflated]<br><br>Included in PSA only (rate assumed 0% in base-case) |
| Migration of CVC | £133.62, standard error of £17.96 | £147.22 with standard error of £19.79 [KiTEC EAC Assessment report 2016, inflated] |

| | | |
|---|---|---|
| | | Included in PSA only (rate assumed 0% in base-case) |
| Dislodgement of PICC | £274 | £301.88 [KiTEC EAC Assessment report 2016, inflated], with assumed standard error of 10%<br><br>Included in PSA only (rate assumed 0% in base-case) |
| Dislodgement of CVC | £440 | £484.77 [KiTEC EAC Assessment report 2016, inflated], with assumed standard error of 10%<br><br>Included in PSA only (rate assumed 0% in base-case) |
| CRBSI | £9900 | £10,907.44 [Derivation from NICE MTG 25, original cost inflated], with assumed standard error of 10%.<br><br>Included in PSA only (rate assumed 0% in base-case) |
| Needlestick | £312 | £343.75 [Derivation unclear, original cost inflated], with assumed standard error of 10% |

## 4. Results from updated model

### i) Base-case

Results from the updated basecase model are shown in Table 3.

Table 2: Basecase model (costs per patient)

| | | KiTEC EAC base-case (updated model received 13/12/2021) | | | | | Updated base-case | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scenario | Time horizon, days | SecurAcath | StatLock | Sutures | Cost difference (SecurAcath - comparator) | Cost difference (SecurAcath - comparator)* | SecurAcath | StatLock | Sutures | Cost difference (SecurAcath - comparator) |
| CVC line | 5 | £22.24 | - | £15.15 | **£7.09** | **£11.09** | £20.49 | - | £9.82 | **£10.67** |
| | 25 | £49.07 | - | £41.98 | **£7.09** | **£11.09** | £31.20 | - | £20.53 | **£10.67** |
| | 120 | £174.29 | - | £167.20 | **£7.09** | **£11.09** | £81.16 | - | £70.50 | **£10.67** |
| PICC line | 5 | £22.24 | £9.71 | - | **£12.53** | **£16.53** | £20.49 | [redacted] | - | [redacted] |
| | 25 | £49.07 | £65.67 | - | **-£16.60** | **-£12.60** | £31.20 | [redacted] | - | [redacted] |
| | 120 | £174.29 | £326.83 | | **-£152.54** | **-£148.54** | £81.16 | [redacted] | - | [redacted] |

**During development of MTG34 the company updated the UK list price of SecurCath from £16 to £20. These are the most relevant data.*

*Key: Green values (negative numbers) represent cost saving in favour of SecurAcath, red values represent cost incurrence.*

### ii) Scenario including adverse event rates

Within the original assessment report, KiTEC EAC modelled a scenario (labelled as multi-way sensitivity analysis (MWSA) because they also applied PSA to it) which included migration, dislodgement and catheter related bloodstream infection adverse events, Table 3. The differences in point estimates and cost differences when compared to basecase model are a consequence of the KiTEC EAC excluding migration, dislodgement and catheter related bloodstream infection events from the basecase model due to lack of robust evidence.

Table 3: Results from scenario including adverse events

| | | KiTEC EAC MWSA (updated model received 13/12/2021) | | | | | Updated MWSA | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scenario | Time horizon, days | SecurAcath | StatLock | Sutures | Cost difference (SecurAcath - comparator) | Cost difference (SecurAcath - comparator)* | SecurAcath | StatLock | Sutures | Cost difference (SecurAcath - comparator) |
| CVC line | 5 | £63.94 | - | £193.01 | **-£129.07** | **-£125.07** | £66.43 | - | £205.78 | **-£139.35** |
| | 25 | £255.90 | - | £901.54 | **-£645.64** | **-£641.64** | £259.07 | - | £967.56 | **-£708.49** |
| | 120 | £1,129.94 | - | £3,696.40 | **-£2,566.46** | **-£2,562.46** | £1134.07 | - | £3,958.83 | **-£2,824.77** |
| PICC line | 5 | £63.54 | £50.38 | - | **£13.13** | **£17** | £65.97 | [redacted] | - | [redacted] |
| | 25 | £253.78 | £266.88 | - | **-£13.09** | **-£9** | £256.74 | [redacted] | - | [redacted] |
| | 120 | £1,120.04 | £1,246.53 | | **-£126.50** | **-£123** | £1123.15 | [redacted] | - | [redacted] |
| **During development of MTG34 the company updated the UK list price of SecurCath from £16 to £20. These are the most relevant data.* | | | | | | | | | | |

*Key: Green values (negative numbers) represent cost saving in favour of SecurAcath, red values represent cost incurrence.*

### iii) Incidental findings

For verification, the EAC was able to replicate the updated model base cases (across 5, 25 and 120 day dwell times), specifically in PICC lines, using R programming language (R Core Team, 2020) and the *rdecision* package (version 1.1.0).

Incidental findings by the NuTH EAC include:

- The decision tree only includes one type of adverse event (AE) per catheterisation. The EAC considers it reasonable to include a single CRBSI or needlestick injury per catheterisation, however considers it possible that multiple migration or dislodgement events may occur, particularly over long dwell times. This would result in increased point estimate costs for all arms.
- The method of conversion from event rates to probabilities does not account for there being multiple possibilities. With the method used, higher adverse event rates or longer dwell times may result in the combined AE probability exceeding 1 (Jones *et al*, *Medical Decision Making* 2017;**37**:779). Using a method for calculating probabilities from rates that accounts for multiple types of event would result in reduced point estimates for all arms.
- The interval between catheter maintenance is 7 days in all arms of the model and is not varied in PSA or any sensitivity analysis. The results may be sensitive to varying this assumption. Shorter intervals will result in higher point estimate costs for all arms with SecurACath increasing less than Statlock but equally to sutures. The opposite will be the case for longer intervals.

## 5. Conclusion

There is no new robust data on adverse events to update the basecase economic model or scenario analysis. Cost changes have meant the magnitude of cost-saving and expenditure in the basecase economic model has changed since the original assessment report by KiTEC EAC in 2016; however the direction of results is unchanged. Therefore the results from the updated basecase model provided by KiTEC EAC, with costs updated to current costs, do not contradict the recommendations of the existing guidance (MTG34).

## 6. References


Fitzsimmons KM, Speekman J, Senior T, Curtis K, Cochrane-Davis A, Barnes R. An observational study of the securement of central venous access devices with a subcutaneous anchor device in a paediatric population at a tertiary level hospital. *J Vasc Access*. 2020; 21(6): 959-962.

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McParlan D, Edgar L, Gault M, Gillespie S, Menelly R, Reid M. Intravascular catheter migration: A cross-sectional and health-economic comparison of adhesive and subcutaneous engineered stabilisation devices for intravascular device securement. J Vasc Access. 2020; 21(1): 33-38.

National Institute for Health and Care Excellence (NICE). Medical Technology Guidance: SecurAcath for securing percutaneous catheters [MTG34]. June 2017.

Pinelli F, Pittiruti M, Van Boxtel T, Barone G, Biffi R, Capozzoli G, Crocoli A, Elli S , Elisei D, Fabiani A, Garrino C, Graziano U, Montagnani L, Pini Prato AP, Scoppettuolo G, Zadra N, Zanaboni C, Zerla P, Konstantinou E, Jones M, Rosay H, Simcock L, Stas M, Pepe G. GAVeCeLT-WoCoVA Consensus on subcutaneously anchored securement devices for the securement of venous catheters: Current evidence and recommendations for future research. *J Vasc Access*. 2020; 1129729820924568.

Zerla PA, Canelli A, Cerne L, Caravella G, Gilardini A, De Luca G, Aricisteanu AM, Venezia R. Evaluating safety, efficacy, and cost-effectiveness of PICC securement by subcutaneously anchored stabilization device. *J Vasc Access*. 2017; 18(3): 238-242.

## Appendix 2. Background documents for this review

Hyperlinks for the background documents for this review report:

1. Medical technologies guidance document
2. Assessment report
3. Scope of assessment
4. A copy of the company information request regarding the technology
5. A list of expert advisers and their completed questionnaires on the MTG review
6. Executable cost model which aligns with the base case described in the MTG documents
7. If there is new evidence which is relevant to any of the clinical parameters in the model, the analyst should send the updated values.
8. Any relevant other documents which are not available on the NICE website.