Costing update report of MTG2: moorLDI2-BI a laser doppler blood flow imager for burn wound assessment

This medical technology guidance was published in March 2011 and updated in August 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 company (moor instruments Ltd) developed the original *de novo* cost calculator for moorLDI2-BI (MTG2, 2011). The base-case economic model was updated by KiTEC EAC in 2016, as part of the guidance review process. Cost savings associated with moorLDI2-BI were driven by reduced length of stay and fewer operations.

The objective of this report is to produce a cost model update for the moorLDI2-BI device. In order to achieve this objective, the EAC has reviewed the model and updated parameters affected by revised costs only. For the purposes of these costing updates, no review of clinical effectiveness has taken place, and none of the clinical parameters described *de novo* cost calculator have been altered.

2. Current validity of model

Collated Expert Advice Questionnaires sent from NICE, summarising responses from three experts, confirms that the care and clinical pathway have not substantially changed since the original assessment.

All three experts were aware of other products with the same purpose as moorLDI2-BI; including digital thermal cameras and FLIR ONE thermal imager (attached to an Apple or Android tablet or smartphone). Two studies were identified by the experts related to alternative technologies:

- Barnes *et al.* FLIR as a novel technique in burn depth assessment? A service evaluation and comparison against the Laser Doppler. *Oral presentation.* July 2016.

- Jaspers *et al.* The FLIR ONE thermal imager for the assessment of burn wounds: Reliability and validity study. Burns. 2017

Six additional studies were identified (all six from the company, and one also provided by an expert) which were published after the guidance review in 2016. Please note that these were not identified from a systematic search so there may be other relevant studies, and these identified papers have not been formally reviewed nor critically appraised by the Newcastle EAC:

- Asif M *et al.* The Added Benefit of Combining Laser Doppler Imaging With Clinical Evaluation in Determining the Need for Excision of Indeterminate-Depth Burn Wounds. Cureus. 2020

- Claes KEY *et al.* Enzymatic debridement as an effective treatment for combined flame and chemical burns caused by e-cigarettes. Am J Emerg Med. 2020

- Goel J *et al.* A prospective study comparing the FLIR ONE with laser Doppler imaging in the assessment of burn depth by a tertiary burns unit in the United Kingdom. Scars Burn Heal. 2020

- Claes KEY *et al.* Evidence Based Burn Depth Assessment Using Laser-Based Technologies: Where Do We Stand? J Burn Care Res. 2021

- Claes KEY *et al.* The LDI Enigma, Part I: So much proof, so little use. Burns. 2021 *Online ahead of print.*

- Claes KEY et al. The LDI Enigma, Part II: Indeterminate depth burns, man or machine? Burns. 2021 *Online ahead of print.*

One expert stated that the moorLDI2-BI has been superseded by moorLDLS-BI. The company has confirmed that moorLDLS-BI is a different device. The moorLDLS-BI has already been included within a NICE Medtech Innovation Briefing (MIB251, 2021) and therefore is excluded from this costing update report.

3. Updated input parameters

The cost parameters were updated in the economic model (see Table 1) to include the following:

- Updated device costs (lease and purchasing cost), including cost of annual servicing obtained from the company. As the base-case relates to the cost savings per patient scanned over one year, no discounting has been applied.

- Updated training costs. The company has confirmed that training has been reduced from two days every two years, to one day every two years; therefore the cost associated with NHS staff members attending onsite training was adjusted accordingly. Note that there is an additional cost of the company providing training (£1408). However, the company confirmed that one training session is included at no additional charge within the purchase cost of a new system, and that ongoing training costs are included within the annual servicing cost. Therefore, the EAC has applied this additional cost of training to the lease arm only.

- Updated hourly staff costs (using costs from PSSRU Unit Costs of Health & Social Care 2019/20).

- Updated theatre costs using latest information from the Public Health Scotland Data and Intelligence (previously ISD Scotland) by specialty.

- All additional costs not readily available were taken from the original company submission (2010) and inflated to 2020 prices using Consumer Price Index (Office of National Statistics – Table 9 L528 Health; published online 14/07/2021, next update due 18/08/2021). Please note that NHS Digital no longer publish excess bed day costs within their annual publication of NHS reference costs (excess bed day costs were last published in 2017/18; this approach aggregated adult and paediatric bed days together). Therefore the Newcastle EAC considered it more appropriate to inflate the values used in the original model to reflect current pricing.

Table 1: Updated cost parameters

Cost parameter	Unit cost (Original model)	Unit costs (Updated 2016)	Unit costs (Updated 2021)	Source (Updated 2021)
moorLDI2-BI leasing cost (per year)	£22,000	£22,000	£25,860	Manufacturer
moorLDI2-BI purchasing cost	£50,000	£53,941	£63,421	Manufacturer
Servicing (per year) applicable to purchased devices only	£8,000	£8,301	£6,145	Manufacturer (Enhanced Warranty Extension contract cost including training, all repair, parts and labour costs, loan kit to prevent downtime during repair; other service options available)
Nurse (band 5) hourly rate	£45	£105	£40	PSSRU 2019/20 (Hospital-based nurse Band 5) [The 2016 costing update used PSSRU 2015 cost of a Band 5 nurse, cost per hour of patient contact, with qualifications. Note that in PSSRU 2019/20 only cost

				per working hour is available]
Clinician (surgeon) hourly rate	£170	£186	£114	PSSRU 2019/20 (Consultant surgical; 48-hr week)
Registrar hourly rate	£61	£81	£50	PSSRU 2019/20 (Specialty registrar; 48-hr week)
Administration cost (per patient)	£15	£16	£19	Value from original company submission 2010 inflated (by 112.6/87.7)
Training (per year)	N/A	N/A	£704	Manufacturer (£1408 every two years). Applied to lease arm only; included within purchase cost.
NHS staff training cost (per year)	£3,416	£5,160	£1,336	PSSRU 2019/20 based on staff time to attend manufacturer training session (note manufacturer has also updated that on-site training has been reduced to one day conducted every two years: eight hours for one clinician, two registrars and three

				nurses); £2,672 every two years.
Cost of day bed (adult)	£378	£387	£485	Value from original company submission 2010 inflated (by 112.6/87.7)
Cost of day bed (child)	£794	£866	£1,019	Value from original company submission 2010 inflated (by 112.6/87.7)
Cost of operation/hour	£2,043	£2,319	£1,535	Theatre running costs from Public Health Scotland 2019/20 (R142X Direct theatre costs per hour; Plastic Surgery & Burns); £1066 Staff time costs based on ratios applied in EAC Assessment report V2 (22/10/2010) Appendix 4: 2 consultants, 2 registrars, 3 nurses, and 1 healthcare assistant at an hourly cost of £114, £50, £40, £21 (£16 from original company submission 2010 inflated by

				112.6/87.7); total £469

4. Results from updated model

In line with the original assessment report, and using scenario 1 as the base-case, net cost savings per patient scanned over a one year time horizon are reported in Table 2.

Table 2: Results from updated cost model.

	Net cost saving per patient scanned per year		
	Original model	Updated model (2016)	Updated model (2021)
Scenario 1: equipment purchased	£1,681	£1,281	£1,485
Scenario 1: equipment leased	£1,665	£1,274	£1,459

5. Conclusion

Update of cost parameters has not changed the direction of cost saving; moorLDI2-BI still results in cost savings per patient scanned over a one year time horizon. This is a consequence of the increase in device cost being offset by reduction in service costs and reduction in on-site training from two days to one day every two years. The EAC advises that no update to guidance, based on economic evidence alone, is required.

6. References

Barnes *et al* (2016). FLIR as a novel technique in burn depth assessment? A service evaluation and comparison against the Laser Doppler. *Oral presentation.*

Jaspers *et al* (2017). The FLIR ONE thermal imager for the assessment of burn wounds: Reliability and validity study. *Burns* 43(7): 1516-23.

Asif M *et al* (2020). The Added Benefit of Combining Laser Doppler Imaging With Clinical Evaluation in Determining the Need for Excision of

Indeterminate-Depth Burn Wounds. *Cureus* 12(6):e8774. doi: 10.7759/cureus.8774.

Claes KEY *et al* (2020). Enzymatic debridement as an effective treatment for combined flame and chemical burns caused by e-cigarettes. *Am J Emerg Med* 38(6):1199-1202.

Goel J *et al* (2020). A prospective study comparing the FLIR ONE with laser Doppler imaging in the assessment of burn depth by a tertiary burns unit in the United Kingdom. *Scars Burn Heal* 6:2059513120974261.

Claes KEY *et al* (2021). Evidence Based Burn Depth Assessment Using Laser-Based Technologies: Where Do We Stand? *J Burn Care Res* 42(3):513-525. doi: 10.1093/jbcr/iraa195.

Claes KEY *et al* (2021). The LDI Enigma, Part I: So much proof, so little use. *Burns* S0305-4179(21)00021-8. [Online ahead of print]

Claes KEY *et al.* (2021). The LDI Enigma, Part II: Indeterminate depth burns, man or machine? *Burns* [Online ahead of print]

Appendix 1. 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.