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moorLDI2-BI: a laser Doppler blood flow imager for burn wound assessment(MTG2)

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Project Details

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Glossary of Terms

EAC	External Assessment Centre
HCHS	Hospital & Community Health Services
NICE	National Institute for Health and Care Excellence

1. Background

The moorLDI is a burn wound assessment imager to guide treatment decisions for patients in whom there is uncertainty about the depth and healing potential of burn wounds that have been assessed by experienced clinicians. The technology was evaluated by NICE, with assessments completed by KCARE in 2010. An update of this guidance is planned and as part of the guidance review process NICE has requested an update to the cost analysis for the base-case scenario.

The intervention is based on the relationship between burn depth and subsequent changes in the microvascular blood flow in the dermis. The technology provides an estimate of perfusion through the burn wound, based on the principal that a lower perfusion correlates with a deeper wound, and therefore a longer time to heal.

The cost model was submitted as a part of the assessment. Cost savings are generated by reduced length of hospital stay and fewer operations. Costs were calculated per patient using a bottom-up approach. Leasing or purchasing options are available for the technology. The original model and parameters submitted by the manufacturer were accepted by KCARE and subsequently by NICE, after modification of the hourly cost for an operating theatre. KCARE considered the manufacturer's estimated hourly rate (£4,593) for operating theatres to be too high and revised this to £2,043. The amended model estimated savings of £1,248 per patient with application of moorLDI after purchasing or £1,232 per patient if the equipment is leased. These results informed guidance development by NICE.

2. Analysis

KiTEC reviewed the cost model and updated all cost parameters. Where updated unit costs were not readily available, the original cost was inflated to 2015 prices using HCHS index (Curtin & Burns 2015). The major changes in the update relate to the cost of an adult bed day for skin grafts, and the revision of unit staff costs. The original cost for an adult bed day was taken from 2009 NHS reference costs (DOH 2009) for the codes JB01A - JB21B. These codes have now been replaced with JB30A - JB33C. The updated costs were taken from 2015 NHS reference costs (DOH 2015). The EAC used the weighted average of Non-Elective Excess Bed Day unit costs for the revised codes (JB30A - JB33C). As there are no reference costs available for child bed days, the EAC inflated the original parameter using the HCHS index.

The original model used a cost per patient contact hour for surgeons, registrars and nurses taken from the Unit Costs of Health and Social Care 2009 (Curtis 2009). The most recent Unit costs of Health and Social Care 2015 (Curtin & Burns 2015) includes costs per patient contact hour and cost per working hour for nurses, but only the cost per working hour for clinicians. The EAC regarded the cost per patient contact hour as the appropriate unit cost. In order to estimate an updated cost per

patient contact hour for a consultant surgeon and a registrar the cost per working hour was multiplied by 1.35. The multiplier was determined as the ratio of the cost per patient contact hour and the cost per working hour for consultant surgeons reported in Unit Costs of Health and Social Care 2009 (Curtis 2009).

In the original submission the purchase cost of the equipment was divided by its lifespan to estimate the annual cost. The EAC felt that annuitizing the cost over the lifespan of the equipment is more appropriate to estimate annual costs of capital equipment. Capital costs were annuitized at a discount rate of 3.5% in the updated model. The updated unit costs and source of the costs are presented in Table 1.

Table 1 ; Updated unit costs

Cost Parameter	Unit Cost(Original model)	Updated unit cost	Source(Updated cost)
moorLDI Leasing cost	£ 22,000	£ 22,000	Manufacturer
moorLDI purchasing cost	£ 50,000	£ 53,942	Manufacturer
Servicing cost	£ 8,000	£ 8,301	Manufacturer
Nurse(Band 5) hourly rate	£ 45	£ 105	Unit cost of Health and Social Care 2015
Clinician(surgeon) hourly rate	£ 170	£ 186	Unit cost of Health and Social Care 2015
Registrar hourly rate	£ 61	£ 81	Unit cost of Health and Social Care 2015
Administration cost	£ 15	£ 16	Inflated to 2015 prices using HCHS index
NHS staff training cost	£ 3,416	£5,160	2 days (16 hours)training for 1 clinician, 2 registrars and 3 nurses(Unit cost of Health and Social Care 2015)
Cost of day bed adult	£ 378	£ 387	Weighted average National Schedule of Reference Costs Year: 2014 -2015 (codes JB30A - JB33C)
Cost of day bed child	£ 794	£ 866	Inflated to 2015 prices using HCHS index
Cost of operation/hour	£ 2,043	£ 2,319	Updated unit costs in the original EAC estimation

After updating the unit costs, the costs savings for the base case ((Scenario 1 Typical) 70% of patients scanned with 2 days saving in bed days and 1 hour saving of operation time) is £1,281 per patient scanned (if the equipment is purchased) or £1,274 per patient scanned (if the equipment is leased). There is an increase of £33 (purchasing option) and £42 (leasing option) in overall cost savings.

3. Conclusions

The new base-case analysis with updated unit costs shows that moorLDI results in cost saving generated as a result of reduced length of hospital stay and fewer operations.

References

Curtis L. (2009). Unit costs of health and social care. Canterbury: PSSRU available at http://www.pssru.ac.uk/archive/pdf/uc/uc2009/uc2009.pdf

Curtis L & Burns A. (2015). Unit costs of health and social care. Canterbury: PSSRU available at http://www.pssru.ac.uk/project-pages/unit-costs/2015/ .

Department of Health(2009). NHS Reference Costs 2008-2009 available at https://data.gov.uk/dataset/nhs-reference-costs2008-09

Department of Health(2015). NHS Reference Costs 2014-2015 available at https://www.gov.uk/government/publications/nhs-reference-costs-2014-to-2015