

## Cost Recovery for a MOSFET Dose Verification System

The cost of dosimetry may be recovered using CPT Code 77331 – “Special Dosimetry”. This code can be used for external beam and brachytherapy dosimetry. All examples are in US\$.

A measurement is defined here as one dosimeter measuring one dose point. The cost per measurement decreases as the number of measurements increases. The following analysis outlines a cost recovery strategy for a clinic.

### Example of Cost Recovery

CPT - Reimbursement for your State at the link below:  
[https://catalog.ama-assn.org/Catalog/cpt/cpt search.jsp](https://catalog.ama-assn.org/Catalog/cpt/cpt%20search.jsp)  
 Enter 77331 as your CPT Code

Number of Days = To Cost Recovery		$\frac{[\text{Cost of System}]}{\text{Avg. \# of Measurements/Day}}$		$\frac{\text{CPT Reimbursement}}{}$
Number of Days = To Cost Recovery		$\frac{[\$13,975.00]}{[10]}$		$[\$70.00]$

Number of Days = To Cost Recovery		20		Days
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Number of Measurements = To Cost Recovery =		$\frac{[\text{Cost of System}]}{[\text{CPT Reimbursement}]}$		
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Number of Measurements = To Cost Recovery =		200		Measurements
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At a reimbursement level of \$70, the break even point for cash flow is at the 200<sup>th</sup> measurement, or after 20 days at an average load of 10 patient measurements per day. Break even clearly depends on the patient load and the level of reimbursement, as in the following examples.

At 5 patient dose measurements per day at \$70 reimbursement, the number of days taken to break even would be 40 days. But at 5 patient dose measurements per day at \$60 reimbursement, the number of days taken to break even would be 47 days. Comparatively, 10 patient dose measurements at \$60 dollars reimbursement would take 24 days to break even.



## Conclusion for Cost Recovery

The MOSFET allows timely cost recovery of the initial investment, which afterwards transfers to a source of revenue. Even while taking only 1 patient dose measurement per day at a modest reimbursement of \$60 per measurement, the MOSFET system cost recovery would take place within 233 days of use, or well within the first year.

## Cost of Dosimeter Consumption

MOSFET dosimeters are not useable beyond a certain cumulative dose. This must be taken into account in the calculation of cost recovery. In the examples given above, the cost of 5 dosimeters was included in the initial capital cost and these would be sufficient for routine treatments well beyond the break even point.

MOSFET dosimeters will be required to be purchased after the first five are consumed, so this cost must be accounted for. A dosimeter must be changed after it has accumulated 20,000mV due to radiation exposure. Under most applications, the voltage accumulated on a dosimeter for a 200cGy fraction is 200mV. Since the standard MOSFET dosimeter costs \$89.00, the cost per treatment is \$0.89 per 200cGy fractions.

## Application Specific Dosimetry

While the majority of customers use MOSFET dosimeters for external beam, in-vivo patient dosimetry, reimbursement can differ slightly based on the type of application. These various applications can include brachytherapy, IGRT, stereotactic and fluoroscopy/radiology dosimetry.

## Brachytherapy Dosimetry

Combined with the MOSFET 5ive Linear Array, the mobileMOSFET can be used for LDR, HDR and MammoSite® dosimetry. Because of 5 separate dose verification points, this enables the facility to bill five special dosimetry charges (CPT Code 77331) which represent a dose profile to the urethra, bladder, rectum, or breast for various procedures. Assume a reimbursement rate of \$70 again.

Cost per Linear Array	\$710.00
Number of Doses per Dosimeter at 200 cGy	100
Cost per Dose per Linear Array	\$7.10
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Revenue per Linear Array Measurement=	\$342.90

## Conclusion

Amortization of the capital cost of the MOSFET dosimetry system dominates the cost recovery results and, in this respect, it is no different from other patient dosimetry systems. MOSFETs have a number of other features which ensure their cost competitiveness against TLD or diode patient dosimetry systems. The fact that the MOSFETs are also well suited for a variety of applications such as fluoroscopy, brachytherapy, IMRT QA, IGRT, stereotactic and in-vivo IMRT dosimetry is also useful in a cost recovery strategy. Being able to use one system for different applications can help avoid the costs of buying several different specialized systems. Multiple applications also allow for multiple revenue streams for the clinic.



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