



Why a Treatment Plan QA Software Program
is Right for Your Facility
JUNE 2007

June 20, 2007

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You read about them in journals, magazines and list servers. You hear your colleagues talk about them. You see advertisements telling you to get one. *Is it really worth it?*

Will I get a return on my investment?

Webster's Dictionary defines *return on investment* as, "the amount of profit, before tax and after depreciation, from an investment made, usually expressed as a percentage of the original total cost invested." Most radiation treatment facilities are for-profit centers, so this classical definition is what drives the purchase of most equipment and software. Treatment plan QA software products such as IMSure QA Software from Standard Imaging may provide an ROI model that justifies the purchase through reimbursement billings.

Return on investment may also be measured in other ways. A big consideration is time savings. IMRT brought many new challenges for the medical physicist including time consuming plan QA and more complicated treatment machines that increased the QA workload. Continued development of other treatment modalities, such as IGRT and radiosurgery will likely increase the already burdensome QA workload. QA Software, when used appropriately, may significantly reduce the time and effort required for some of these tasks. Since IMSure QA Software does not require any machine time to perform these tasks, it reduces the time spent performing QA after hours, and on weekends.

"Show me the money!"

There are two ways IMSure QA Software may increase revenues through billing. The first is the possible ability to charge for the 77300 Basic Dosimetry for each plan that is run through IMSure. To bill for this code it must be prescribed and noted in the chart by the physician that the plan be checked using a secondary calculation method. After this is done, for each plan that is checked, a charge of \$50 per field checked may be billed.^{1,2}

Number of Patients Treated with IMRT (yr)	Total fields checked (average 5 fields per tx)	Value per field checked	Total Reimbursement	Cost of IMSure Software	ROI Year One
50	250	50	\$12,500	\$15,000	-\$2,500
75	375	50	\$18,750	\$15,000	\$3,750
100	500	50	\$25,000	\$15,000	\$10,000

With a cost of approximately \$15,000 and a patient load of less than 1 IMRT patient per week, IMSure QA Software almost pays for itself within the first year. At a patient load of 2 IMRT patients per week the software may be able to produce a net profit of \$10,000 in the first year.

The second way IMSure QA Software may increase revenue is by allowing more patients to be treated with IMRT. The current reimbursement ^{1,2} for a standard IMRT treatment can include:

77301 IMRT Planning	\$1,370
77300 Basic Dosimetry (5 fields average)	\$250
77334 Complex Treatment Devices (5 fields average)	\$605
77418 Radiation tx delivery (24 fractions)	\$15,408
77336 Rtx physics consult (weekly)	\$612
Total	\$18,245

IMSure QA Software may increase patient throughput if it is used as a first check of a plan after approval. Doing so may prevent running a measured QA on an invalid plan. The tools in IMSure can also make it easier to analyze your measured results by indicating an area of the plan that requires closer attention. Efficiencies gained through these practices would allow the treatment of more patients, resulting in a positive return on investment.

Additional IMRT cases per year though efficiencies	Additional Reimbursement	Cost of IMSure	ROI in Year One
1	\$18,245	\$15,000	\$3,245
3	\$54,735	\$15,000	\$39,735
5	\$91,225	\$15,000	\$76,225

Another way IMSure QA Software may increase patient throughput is by following the recommendations found in ACR Practice Guideline for Intensity-Modulated Radiation Therapy – 2002.

As patient data are accumulated that demonstrate the dosimetric accuracy of the IMRT planning/delivery system, dose and dose distribution alternatively may be verified using an independent dose calculation method. Prior to its implementation, the physicist should validate this methodology using physical measurement data over a series of patients. Following its implementation, the physicist should periodically check its accuracy using physical measurement data such as that detailed above. Using such appropriate instrumentation and scientific rigor, the results of the measurements should be communicated to the responsible radiation oncologist and incorporated into the patient chart.

By replacing measurements with an independent dose calculation method, such as IMSure, you can reduce the QA time per patient from hours to minutes, allowing your facility the opportunity to accommodate a greatly increased patient load. Notice that the guideline states that the dose and *dose distribution* should be verified. IMSure QA Software gives you the tools to not only verify dose to up to 30 points, but also to compare the intensity maps from a treatment planning system to independently calculated maps in the software, making it the clear software choice that satisfies the ACR recommendations of verifying both dose and *dose distribution*.

Additional IMRT cases per year though efficiencies	Additional Reimbursement	Cost of IMSure Software	ROI Year One
20	\$364,900	\$15,000	\$349,900
30	\$547,350	\$15,000	\$532,350
40	\$729,800	\$15,000	\$714,800

Why IMSure QA Software?

There are currently at least four choices for secondary dose calculation software. It would be prudent to ask why you should choose IMSure QA Software over the others. There are three main ways in which IMSure QA Software differs from the competition.

Calculation algorithm – IMSure is the only software that uses the patented 3-source model algorithm developed at Stanford University. The 3-source model accurately calculates the contribution to dose from head scatter (S_c). Most other software use only the modified Clarkson algorithm which cannot do this. Head scatter contributes up to 12% of the dose a patient receives, so it stands to reason the software that calculates this more precisely is going to have the most accurate calculation. One physicist had this to say about IMSure QA Software:

“I am impressed with the accuracy of the dose calculation in IMSure. In fact in many cases it agrees with my measured values in a phantom better than my treatment planning system.”

*John Fan
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Ability to compare intensity maps – As stated above in the ROI analysis, IMSure QA Software allows you to import intensity maps from the treatment planning system and compare them directly with an independently calculated map within the software. Five different methods of analysis are available including difference maps, gamma function, and histograms. This ability meets the guidelines set in the ACR recommendations.

Ease of use – IMSure QA Software was designed by a clinical medical physicist for use by clinical medical physicists. It’s easy-to-use interface provides you with all the information you need to make a decision about your plan on a single screen, including multiple calculation points and each beam’s contribution to the total dose.



Try it yourself

IMSure QA Software is available for a 60 day trial demonstration. The demonstration software is fully functional and will allow you to enter your own machine data and perform QA on your own patient plans. Contact your Standard Imaging sales representative for your free trial or request additional information online at www.standardimaging.com.

¹ Medicare Physicians Fee Schedule reported in ADVANCE for Imaging and Oncology Administrators, April-May 2007

²Free Standing payment component used for this illustration. Hospital based reimbursements may differ

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