FAST, PRECISE

Software for accurate and independent verification of monitor units, dose, and overall validity of standard, IMRT, VMAT, SRS and brachytherapy plans – no film, no phantoms, no linac time required
The process for verifying IMRT or rotational (RapidArc™ or VMAT) delivery is a very complex process. Dynamic MLC delivery creates hundreds of small fields that are difficult to verify by ‘hand-calculations’, a traditionally accepted practice in radiation therapy. IMSure QA Software uses advanced algorithms, including the patented 3-Source Model, to greatly reduce the time required to conduct IMRT and rotational delivery QA, without the need for film, phantoms or linac time.

Developed at Stanford University, the 3-Source Model accurately calculates the head or collimator scatter (S_c) contribution to linear accelerator output. This model works for most field sizes and shapes, and for most points within the field. Incorporating these secondary check features into your QA processes will provide concise, confident verification of plans saved in the R&V system, while helping avoid potentially clinically significant errors.

The 3-Source Model

In this illustration of a linac head, the red beam represents the primary photon source and the white lines show radiation scattered by the primary collimator and the flattening filter. Some scattered radiation may leak from the head and reach the patient through the jaws and multi-leaf collimator, contributing up to 12% of the dose the patient receives. IMSure QA is the only dose calculation software that uses the patented 3-Source Algorithm to calculate the contribution to dose accurately from all three of these sources as well as jaws & MLC.
**Imported treatment planning system fluence is directly compared to independently calculated fluence**

Check MU or specific-point dose quickly and easily with automatic hand calculations

**Non-IMRT plans for both photon and electron beams are easy to verify in IMSure QA.** The information you need to verify your plan is shown on a single screen. Imported information can be automatically or manually filled in to create simple plans. Support for open beams, beams with blocks, stereotactic cones and wedged beams including the Varian Enhanced Dynamic Wedge, Elekta Omni Wedge and Siemens Virtual wedge is included.

**Easy Monitor Unit Verification**

Non-IMRT plans for both photon and electron beams are easy to verify in IMSure QA. The information you need to verify your plan is shown on a single screen. Imported information can be automatically or manually filled in to create simple plans. Support for open beams, beams with blocks, stereotactic cones and wedged beams including the Varian Enhanced Dynamic Wedge, Elekta Omni Wedge and Siemens Virtual wedge is included.

**Advanced Features**

IMSure QA Software includes many advanced features allowing you to streamline your plan QA:

- **In-vivo measurement support** – IMSure QA automatically calculates an expected reading for a diode placed at the surface in relation to the isocenter or any valid calculation point. A printable comprehensive setup report allows for easy setup and reporting of measured results.

- **Multiple calculation points** – Import unlimited points of interest from your treatment planning system or manually enter these for more complete plan evaluation.

- **Block editor** – An interactive block editor allows for the creation of standard or island blocks or editing of block shapes imported from your treatment planning system.

- **Heterogeneity correction** – Import CT images and structure set for automatic calculation of effective depths in IMSure QA.

- **Decimal Compensator Support** – Utilizing a full convolution algorithm, IMSure models the scatter, beam hardening effects and field-size dependencies to calculate a true compensator factor for even the most complex .decimal filters.

**Thorough Stereotactic QA**

Calculate and confirm cone-based or MLC-based stereotactic treatments, including conformal and dynamic arcs. Create specific energies in the physics module to accurately model small fields found in stereotactic plans.

**Cyberknife Plan Verification Module**

The Cyberknife module quickly and easily validates monitor units and dose for Raytrace and Monte Carlo plans created on the MultiPlan treatment planning system. Color coding immediately allows you to recognize individual projections that are outside tolerance.

**Comprehensive Verification of Your Entire Plan**

The patented Stanford University 3-Source Model considers the dose from the primary photon source, the primary collimator scatter, and the flattening filter scatter, resulting in extremely accurate dose calculations, including those in high-gradient/low-dose regions common in IMRT.

**Easy Monitor Unit Verification**

Does checking a single point constitute good QA? In classic IMRT QA protocol a phantom is placed on the couch with an ion chamber to check point dose, and film is placed between the phantom slabs to measure fluence for an overall plan evaluation. IMSure QA is the only software of its kind that can complete both parts of the classic IMRT protocol, point dose verification and a fluence check.

With multiple calculation point support, IMSure allows you to place an unlimited number of ‘virtual’ chambers anywhere in the field to sample point doses. IMSure will also import the fluence from your treatment planning system and directly compare that to an independently calculated fluence for comprehensive verification of your entire plan.

**View data for all beams on a single page**

**EASY MONITOR UNIT VERIFICATION**

**Fast IMRT and VMAT Dose Verifications**

The IMSure QA Software 3-Source Model delivers an accurate secondary check of your treatment plan quickly and easily. In only two steps, and in less than a minute, you can choose your patient treatment plan and analyze the results with IMSure QA.

**Structures**

Importing the structure set along with your plan allows for better visualization of your plan data. Utilize contours to draw blocks for tissue sparing or to account for missing tissue (flash). Also import CT images for automatic effective depth calculation to account for patient heterogeneity.

**Structure Specific Analysis**

Utilize the Volumes control to analyze your plan based on anatomical structures of interest such as the PTV or a critical structure for in-depth analysis of your plan.

**Intuitive Computing**

Automatic SSD and effective depth calculations are performed when CT slices and structures are imported along with a plan. This allows the system to account for heterogeneities within the patient geometry. For VMAT plans, an optional Control Point Report provides segment by segment values for the SSD and effective depth of each calculation point.
FAST, ACCURATE BRACHYTHERAPY PLAN CHECKS

The Brachytherapy Module, available as an add-on component to IMSure, imports DICOM-RT plan files from treatment planning systems and utilizes the TG-43 formalism for dose calculations (Comparison to plan is in percentage difference).

Visualize Sources in 3D
View calculation reference points and sources, including catheters and dwell positions, in three dimensions with keyboard shortcuts for viewing orthogonal, sagittal, transverse and coronal planes.

Automatic Decay of Source Strength
Choose whether to calculate the dose based on the reference source strength stored in the source library or the source strength at any date and time specified, including the time of implantation.

In-Depth Analysis of Each Dwell Position
Choose the calculation point and dwell position of interest and each will be highlighted in the 3D view. The dose contribution to the chosen calculation point from the selected well position is shown along with the factors used in the calculation enabling easy analysis of every facet of the plan.

ACCELERATE YOUR COMMISSIONING AND REPORTS

Physics is Easy with IMSure QA
The Physics Interface for IMSure QA, like the rest of the software, is designed for ease-of-use. Linear accelerator data can be viewed in either tabular or graphical format in a single screen with an intuitive hierarchical design. IMSure QA relies on your linear accelerator parameters to simulate dose delivery. The data needed to set up IMSure come from the last time you commissioned your machine. For photons you need: Tissue Maximum Ratios (TMR), Off-axis Ratios (OAR), Output Factors (OF) and Head Scatter Factors (Sc). For electrons you need: Percent Depth Doses (PDD), Off-axis Ratios (OAR), Cone Output Factors (OF) and Cutout Factors (CF). Data can be entered for both standard 100 cm SSD and extended SSDs if desired. Simply set up the data in the IMSure QA format and import. A comprehensive guide and sample data sets are included to direct you in formatting your data for import. If you prefer to have your data set up for you, Standard Imaging will perform this service free for up to three linacs.

Single Page User Interface
Workflow, for every IMSure module, is designed around a single page view of an entire plan. Avoid redundant clicks while gaining confidence by quickly and easily navigating results from each field.

Comprehensive Report Formats
Print comprehensive reports of your calculation results for attachment to the patient record or export to a PDF or CSV file for use with electronic record keeping.