Proven performer moves to the next level

Excellence and innovation are the hallmarks of the GammaMed™ name in high dose rate (HDR) brachytherapy. For more than 40 years, GammaMed products have long forged a legacy of firsts, driving technology forward to provide cancer centers worldwide with the most advanced tools for planning and administering brachytherapy treatments. The GammaMed plus iX is the fifth generation in a long and respected line of GammaMed afterloaders.

The GammaMed plus iX introduces a new level of digital technology, with a new console computer system that is compatible with today’s hospital networks; enhancing the brachytherapy experience today and providing a platform for future development.

Applying the principles of integration and openness, the GammaMed plus iX system has evolved to include multiple options and flexibility for the end user: GammaMed plus iX and GammaMed plus 3/24 iX remote afterloaders, BrachyVision™ treatment planning software, and Varian and third-party applicators.

To meet the needs of a broader range of customers, Varian BrachyTherapy includes the GammaMed plus 3/24 iX model in its family of brachytherapy solutions. Based upon the proven GammaMed plus platform, the 3/24 model can handle typical brachytherapy procedures requiring three treatment channels, and can be upgraded to a 24 channel afterloader on site, at any time, by a Varian service engineer.

A complete treatment solution

Precision-engineered and equipped with such critical features as an on-board radiation detector (a practice pioneered by GammaMed), an emergency source retraction system and a back-up power source, the GammaMed plus iX is safe, precise and flexible—a complete treatment solution.
Safety, precision, and flexibility combined

Safety you can trust
GammaMed\textsuperscript{plus} iX complies with and has been validated against IEC 601-2-17 and meets major international standards for product performance and safety. In addition, the system comes complete with a built-in Geiger Muller radiation detector and features distal-to-proximal source movement, and a unique applicator length test for utmost safety and quality assurance.

Fixed length treatment distance
To eliminate errors due to incorrect treatment length entry, the GammaMed\textsuperscript{plus} offers a fixed length treatment distance. The combined length of the applicator and source guide tube is always 1300 mm. You will always know where the source will deliver radiation, without worrying about treating the wrong area.

Unique applicator end test
Only the GammaMed\textsuperscript{plus} offers the unique applicator end test capability, which sends its dummy source to the end of the channel and then presses another 5 mm to ensure that it detects a closed-end catheter. This test also verifies an unobstructed source path and a total channel length. The last five channels in the device, and two of the five usable channels on the GammaMed\textsuperscript{plus} 3/24 model, however, do not perform this applicator end test. These channels are used for intraluminal cases where it is not desirable for the dummy to push against the end of a flexible catheter.

Distal-to-proximal source movement
By sending the source to the furthest point and pulling it back towards the safe, the device maintains wire integrity, accuracy in positioning, and again verification of clear source passage.

Simple source data entry
After source exchange calibration, the source strength is entered one time into the control software. The decay factor is maintained on the non-volatile memory of the control computer.

Uniquely bases treatment times on nominal 10 Ci source activity
Treatment plans are accepted with a fixed 10 Ci activity, so you develop a knowledge base of typical dwell times for similar cases. It is the device that tracks the decay of the source and then modifies the treatment time to accommodate this decay.

Direct transfer of patient information
Treatment data can be transferred between networked computers to remove the possibility of data entry error. Data can also be transferred via USB memory stick between non-networked computers.

Additional features
- 0.1 second dwell time resolution
- 0-999.9 seconds variable dwell time range
- Selectable treatment step size, 1-10 mm, in 1 mm increments

Precision and flexibility
Source
- 0.9 mm capsule diameter, 4.52 mm capsule length.

Cable
- 200 mm ultra-flexible final braided section. This section at the end of the cable allows for the ultimate flexibility in negotiating tight catheter turns.
- Tested for up to 5000 transfers. The durability of the cable will exceed typical or extended use.
- 13 mm minimum bending radius. This exceptionally flexible source cable can easily navigate even the tight bends in an ERCP bile duct treatment.

Adjustable Afterloader Height
The indexer head can be raised to enable a level source treatment path from device to patient. This optimizes the path to the treatment site and provides for patient comfort in seated or prone positions.
Dedicated, intuitive control software

Varian recognizes the unique challenges of delivering HDR treatments. Time pressure is high and patients are anxious, while the importance of getting it right is paramount. That is why Varian has worked with customers, human interface engineers, and software developers to produce an afterloader control interface that is both intuitive and simple to use.

The best way to travel the information highway is step by step

From logging on to the system, to treatment delivery, the new console software walks you through the process one step at a time. At each stage, you are presented with information in a controlled and stepwise manner in order to ensure no detail is overlooked.

After logging on, you have a simple choice of workflows – deliver a treatment, or create a treatment. Then, in the case of treatment delivery, the software steps through selecting the patient, confirming the demographic data, selecting the fraction, checking the treatment parameters and then helps you monitor and control the treatment delivery process.

Data is only useful when you can understand it

With the logical screen layout, intuitive icons, and clear graphics the control software gives you everything you need where, and when, you need it. Icons at the foot of the screen indicate the system status, source calibration information, and, prior to treatment initiation, the status of all critical interlocks.

In order to reduce the risk of selecting the incorrect patient for treatment the iX software uses a “wizard” style process for importing patient data from the treatment planning system. The user is stepped through the patient demographic data to ensure that all fields match. The software will also recognize if the patient file already exists on the system and offer to create a new file or add the treatment to the existing course as a new fraction.

Another unique feature of the software is the way plan data is presented. Rather than present a mass of figures that are easily misinterpreted, the software represents dwell times in a bar graph format making it straightforward to spot a discrepancy. Furthermore, prior to treatment delivery the console displays a full treatment report that can be printed or stored.

The unique channel display facilitates clear indication of both dwell times and positions.

When it comes to treatment delivery knowing exactly what is going on during a treatment is essential. With the iX software this can be determined at a glance – radiation status, wire position, remaining channel time (in minutes and seconds), all can be easily seen on the screen. The display even contains a graphical representation of real-time wire position.
The right tools

Applicators and accessories for every brachytherapy need

Precision treatment requires precision applicators, accessories and quality assurance tools. Varian BrachyTherapy offers a wide selection of applicators and accessories for your HDR intracavitary, interstitial, intraluminal, intraoperative and surface treatments. We are especially proud of our titanium range of CT and MR compatible applicators. These products are a major step forward from plastic products. They are robust, and the tubing used is very thin—thin enough that the tandems can be used with Smit sleeves for rapid and easy tandem placement for each fraction, without the need for anesthesia. And, these products are steam sterilizable.

The GammaMedplus 3/24 iX

Precise and flexible brachytherapy system

Nearly 80% of all HDR brachytherapy procedures are performed with up to three channels. A modified version of the 24 channel GammaMedplus iX, the 3/24 is the easiest way to initiate a brachytherapy program. As your HDR brachytherapy program grows, the 3/24 can be upgraded on site at any time by a Varian service engineer.

The 3/24 has all of the safety features, precision and flexibility of the GammaMedplus iX, with five channels rather than the standard 24. Channels 1-3 are typically used for intracavitary treatments and allow for GammaMed’s unique applicator end test. Channels 23 and 24 are used for intraluminal or other treatments where an end test check is not desired. A maximum of three channels can be used in one treatment delivery session.

The latest technology

Varian is committed to providing you with the latest technology in applicators and accessories, and proud to offer the most comprehensive line of applicators and accessories available.

Segmented cylinder applicator set

CT/MR Ring & Tandem applicator

Fletcher-Suit-Delclos-type applicator set

Transition to HDR brachytherapy

The 3/24 offers facilities the most efficient way to begin a brachytherapy program. As the HDR brachytherapy program grows, the 3/24 can be upgraded on site at any time by a Varian service engineer to the full GammaMedplus iX 24 channel afterloader.

Easy entry into HDR brachytherapy
Tested to the following standards:

**Impact**
- ANSI level 3 impact test (same as ISO 2919 Class 3) and ANSI/HPS 43.6-1997 section A.2.2.6 and A.2.2.7 liquid nitrogen bubble test and helium leak test.

**External pressure**
- ANSI level 3 external pressure test ANSI N43.6-1997 section 7.3 (same as ISO 2919 for Class 3) and then ANSI/HPS 43.6-1997 section A.2.2.6 and A.2.2.7 liquid nitrogen bubble test and helium leak test.

**Temperature**
- ANSI heating and cooling and thermal shock test ANSI/HPS N43.6-1997, paragraphs 7.2.1, 7.2.2, and 7.2.3. (more severe than ISO 2919 section 8.2 [8.2.1-8.2.3, Class 6] and then ANSI/HPS 43.6-1997 section A.2.2.6 and A.2.2.7 liquid nitrogen bubble test and helium leak test.

**Vibration**
- ANSI level 2 vibration test ANSI N43.6-1997 section 7.5 and then ANSI/HPS 43.6-1997 section A.2.2.6 and A.2.2.7 liquid nitrogen bubble test and helium leak test.

**Puncture**
- ANSI level 2 puncture test ANSI N43.6-1997 section 7.6 and then ANSI/HPS 43.6-1997 section A.2.2.6 and A.2.2.7 liquid nitrogen bubble test and helium leak test.

**Wire and drive parameters**
- Nominal wire speed-0 slip: approximately 60 cm/s
- Wire positioning accuracy: ±5 mm relative to the indexer

Afterloader shielding
- Safe material: Tungsten
- Maximum storage capacity of safe: 555 GBq (15 Ci)
- Maximum Air Kerma Rate 1 m from afterloader: does not exceed 3 μGy/h for maximal load
- Radiation shielding: Conforms to International Electrotechnical Commission requirements (EN 60601-2-17) ICRP codes and applicable NRC standards in the USA

Room shielding
- Controlled by local codes and conditions of operation
- Approximately 4 cm of lead or 35 cm of concrete is generally required

Source placement
- 24 treatment channels
- 60 dwells per channel
- Step size: default 5 mm, programmable from 1-10 mm, in 1 mm increments
- Minimum radius of curvature at the distal end of the catheter: 1.3 cm in a ring probe of diameter 2.6 cm and in a 5 Fr bronchial catheter
- Method of source movement: commences at most distal dwell positions and steps back

Safety listings
- EN60601-2-17

Equipment classification
- Type of protection against electric shock: CLASS 1
- Degree of protection against electric shock: TYPE B
- Degree of protection against harmful ingress of water: IP 40
- Equipment not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide
- Class of operation: CONTINUOUS

Electrical power requirements
- System power rating: 115 VAC / 60 Hz or 220V / 50 Hz models available, 100 VA
- In the event of a power failure, the afterloader is powered through the internal batteries to allow the source to retract to the safe

Environmental requirements
- Operating temperature range: +15 to +35°C
- Humidity range: 30% to 75% (non-condensing)
- Air pressure: 70 kPa - 110 kPa

Weight & dimensions
- 130 kg
- 105 cm H x 51 cm W x 57.5 cm D

Safety equipment (emergency container)
- Emergency source container is designed to hold most applicators directly
- Minimum shielding: 26 mm lead
- Minimum diameter (inner plastic container): approximately 60 mm
- Container height (internal): 270 mm

The GammaMedplus 3/24
The GammaMedplus 3/24 has all of the safety features of the 24 channel GammaMedplus. It uses the same source and flexible cable, and it has the same precision and flexibility, except for the reduced number of channels.

Specifications subject to change without notice.
For more information on the GammaMedplus iX and 3/24 iX HDR afterloaders, visit http://www.varian.com/brachytherapy.