Charter Main
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MESSENGER
News and Information from Charter Main

Covid-19 Going? Where Are We Now?

Dear Valued Customers

Now that the Covid-19 pandemic seems to be under control, at least in Australia, we thought it about time to dust the cob-webs off the V/P S.P.E.C.T. scan and recommence this valuable scanning technique.

Much ado was recently made regarding the value or otherwise of brass in the contacts used to generate Technegas. This matter was put to rest in Newsletter One (copies available on request). Further to this, the Almedis kits are fully registered in Australia (ARTG No 319260) after rigorous scrutiny by the authorised regulatory body in Australia and widely recognised as an equivalent delivery kit to what

Service Agreements

you are currently using.
Secondly, our service engineer is receiving an inordinate number of requests for help to repair faulty Technegas generators from customers who DO NOT have a service contract with Landauer Australasia P/L.

If you have a service agreement with another company YOU SHOULD CONTACT THEM IN THE FIRST instance. IT IS THEIR RESPONSIBILITY TO REPAIR YOUR TECHNEGAS GENERATOR AND PROVIDE TECHNICAL ASSISTANCE; THAT IS WHAT YOU ARE PAYING FOR!! While we are prepared to support you as much as possible, we would ask that you also support us. If satisfaction is not guaranteed from your present supplier, give us a go!!

At least purchase your consumables from us and save thousands of dollars in the process.

In order to help you decide on resurrecting V/P S.P.E.C.T., we at Charter Main/Landauer Australasia P/L want to provide you with financial incentive to get you going again and provide competition in the market place, so that finally you have a choice!!

Until December 31st, 2021, Charter Main/Landauer is prepared to sell boxes of 50 Almedis consumables (ARTG 319260) for $2,000.00 per box (exclusive of G.S.T. and freight)!!!

This represents a saving for your practice of over $500.00 per box!! Get in touch with David to discuss your options.

Also, if you are concerned about radioactive gas escaping into your imaging room during the Ventilation process, Google vent-medis.com and look for mobile extraction system for aerosols. This powerful extraction system provides a quick, low-cost solution to your problem.

Call David, your local distributor, on (02) 8651 4008 or 0413 481 585 to discuss how your consumables costs can be drastically reduced and your service and training requirements expertly handled.

Your Charter Main Support Team

TECHNEGAS - SUCK IT AND SEE!

Most drugs or pharmaceuticals are ingested in a controlled and measured manner. If you have hypertension you take a tablet of KNOWN strength to lower your B.P. You might take 150 mg of an ace-inhibiter and titrate the dose to lower your blood pressure to an acceptable level. You might have an acceptably high cholesterol reading so you take, say, 10mg of a statin and over a period of several months, you titrate the dose to provide a cholesterol reading acceptable to you and your physician. The point is that you take a prescribed medication of REPRODUCIBLE and CONSISTENT strength.
You know how much you are taking each and every time.
The same applies to pharmaceuticals classified as imaging drugs.
A field of known strength may be applied in a CT scan or MRI scan.
A KNOWN amount of dye may be injected in a contrast scan.
But how does anyone know how much Technegas is administered in a V/P S.P.E.C.T. scan?
<u>It is impossible to quantify</u> and the best one can do is measure the counts per second emanating from the patient AFTER the scanning dose has been administered.
So, why does this variability arise.
There are several issues, operator and patient dependant, which cause this variability:

1) <u>Specific Activity</u>

Every radiopharmaceutical decays with its own trade-mark signature.
Technetium-99m has a half-life of 6.2 hours.
Gallium-68 decays with a half-life of 67.71 minutes.

Gallium-67 has a half-life of 78.3 hours.
Technetium-99 decays with a half-life of 211,000 years!
So, 0.13 µl of a very high specific activity Technetium-99m solution will deliver a totally different amount of Technetium-99m to that delivered by 0.13 µl of a dilute solution. Whether this occurs when a Technetium-99m generator is milked or upon receipt of instant Technetium-99m from a radiopharmacy, IT IS IMPOSSIBLE to deliver a reproducible and consistent amount of Technetium-99m EACH AND EVERY TIME.

2) Operator variability

Added to this is the fact that each technologist delivers a different volume of solution when they put eluate into the crucible. Remember, we are injecting APPROXIMATELY 0.13 µl (a very small amount) of a solution of variable specific activity each time we are producing Technegas!!! The aim is to have approximately 700 MBq in the crucible. 0.13 µl does NOT necessarily deliver 700 MBq of Technetium-99m as the time of day, delivery volumes, etc. play a significant part in the process.

3) The Breathing Patient.

Perhaps the greatest variability in the whole process is the patient themselves!
The physiology of people is as diverse as the number of people walking the planet. For instance, approximately 1% of the population has dextrocardia situs inversus!
Then, people undergoing a V/P scan react to the procedure in various ways. Some remain calm throughout, breathe as directed, sit motionless during the scan and have no difficulties at all.
Others panic at the sight of the equipment in the procedure room, hyperventilate, twitch uncontrollably on the scanning bed, cannot breathe and provide a poor scan. Their breathing is normally shallow and frequent, they do not breathe the Technegas deep into the alveoli of the lung and the result is poor counts and poor image quality.

4) Molybedum-99/Technetium-99m generators.

The Molybdenum-99/Technetium-99m generators deliver a nominal quantity of radioactive Technetium-99m to nuclear medicine departments and radiopharmacies. However, a Mo-99/Tc-99m generator does not deliver an exact amount of radioactivity and may only be accurate to +/- 10%.
Additionally, when dispensing the radioactive eluate, the amount dispensed is only as accurate as the individual doing the dispensing and almost always varies wildly.
Nuclear medicine departments then attempt to dispense a Technetium-99m dose designed to give the counts required by the protocol of each individual department. Some departments like to see 2,000 counts per second under the gamma camera, some departments believe that 1,000 counts per second is sufficient while others accept that on low-activity days the amount available may be as low as 600 to 800 counts per second.
The point, once again, is the serendipitous nature of administering Technetium-99m to produce Technegas.

5) Technegas generator settings and variability

And finally, there's the Technegas generator itself.

Every generator is different!!

There is variability in the production of Technegas dependent upon:

a) the simmer temperature
b) the burn temperature
c) quality of the contacts and when these were last changed
d) alcohol or lack thereof in the crucible
e) length of time sitting in the generator before administration
f) cleanliness of the generator
g) proper maintenance and calibration of the generator

For example, if the simmer temperature is not set correctly and not completely drying out the crucible before the burn cycle, the remaining liquid will be instantly boiled when the burn starts and be blown out of the crucible thereby reducing the Technegas yield and producing pertechnetate with consequent thyroid uptake.

All of these factors contribute to the production of Technegas which is in no way REPRODUCIBLE or CONSISTENT!

So, at best, the Technegas generator is a suck it and see device!!

A patient sucks on a disposable consumable, takes several breaths to obtain a count rate according to the hospital's adopted V/P S.P.E.C.T. protocol and in essence has no idea how much of the product has been ingested owing to decay, production and manufacturing and patient variances!!

Until the Technegas is in the patient's lung and the count rate established under the gamma camera, you don't know how much Technegas has been administered!!

PROPER DISPOSAL OF TECHNEGAS AND TECHNEGASPLUS GENERATORS.

Technegas generators have a defined life-cycle. The generators are extremely reliable and with proper maintenance, servicing and attention to optimal calibration, this life-cycle may extend to several decades.
When they need replacing:
IT IS NOT JUST A SIMPLE CASE OF TAKING THEM TO THE TIP.
Such inconsiderate actions point to either a total misunderstanding of the product and its potential hazards or scant regard for other people's health.
Tc-99 (ground-state Technetium), produced with EACH Technegas generation, has a half-life of 211,000 years and may pose a radiation hazard to unsuspecting individuals.
THE GENERATORS MUST BE PROFESSIONALLY DECOMMISSIONED AND APPROPRIATELY DISPOSED OF!!

We believe that it is incumbent on people who become aware of circumstances that could cause the POTENTIAL for adverse health outcomes to disclose this information as a "duty of care" issue.

Mobile extraction system for aerosols and pseudo gas

With the mobile extraction system vent-medis offers you an ideal additional device
to increase safety in lung ventilation with active aerosols
and quasi gases. The mobile device is easy to handle, easy to operate and requires only little space (footprint 40 x 50 cm).

With this system you can achieve additional safety when using aerosols and quasi gases. The unit sucks in and filters the ambient air around the patient's head. If aerosol / gas escape due to a patient error during exhalation or a sudden cough, it can be sucked off and thus room air contamination can be greatly reduced.

The filter unit in the device is specially designed for technetium graphite particles and contains a powerful dual filter system consisting of a pre-filter and a high-performance ULPA-class HEPA filter.
(ULPA filter = Ultra Low Penetration Air Filter).

The control of the device is equipped with a digital full-text control panel
with speed control, filter monitoring and operating hours counter.

The swivel arm has a pipe diameter of 7.5 cm and a reach of 85 cm. The round, transparent dome hood has a patient-friendly and even recommended diameter of 50 cm.

The housing is made of sturdy sheet steel and runs on smooth-running double castors. It has a wide handle on the top and a large cable holder with combined wall impact protection on the rear side.

Technical data of the filter system:
Flow rate: ca. 550 m3 / h
Pressure difference: 2600 Pa
Motor rated power: 360 W
Speed: max. 5800 rpm
Rated voltage: 230 V, 50 Hz
Current consumption: 1,6 A
Dimension WxDxH: 40 x 57 x 76 cm
Weight: about 50 kg

A NOTE OF CAUTION CLEANING TECHNEGAS GENERATORS

Caution needs to exercised when cleaning Technegas generators.
During the manufacturing of Technegas and its decay, Technetium-99m, with a half-life of 6 hours decays to Technetium-99 (ground-state Technetium) which has a half-life of 211,000 years!!
To all intents and purposes, Technetium-99 is produced in such miniscule quantities and patient exposure so limited that it is not a health problem for the patient.
BUT
Service engineers constantly cleaning and calibrating generators during an average working day, may come into contact with much more Technetium-99 than most people having a nuclear medicine scan.
In addition, many years of performing this task also has the potential to result in accumulated exposure to this ground-state, long-lived isotope.
The ground-state Technetium-99 may be inspired or enter the body of the unsuspecting through the skin.
Once in the body the Technetium-99 is there for an awfully long time!!!
Nuclear medicine technologists, service engineers and people who clean the Technegas generators in the mornings emptying out the ash trays are ALWAYS advised to wear gloves. We have all seen instances where this procedure is not followed to the letter and the ash tray is emptied without wearing disposable gloves.
The thinking here is that after 24 hours, Technetium-99m has decayed to very low levels. While this may be true, ground-state Technetium-99 is present and this beta-emitter may result in radiation-related illnesses.
Being fully aware of this potential issue, we believe that it is our duty of care to advise all involved in the daily use of Technegas generators to wear appropriate gloves that reach at least to the mid-elbow and NOT to expose any part of their skin to the inside of the chamber, whether the Technegas generator has been recently used or not.

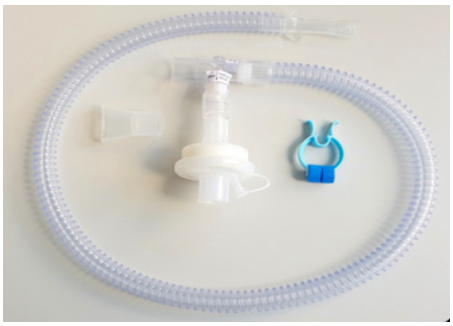
Please observe good working practice at all times.

Vent-Medis disposable kit for Ventilation Scintigraphy

Large 0.3µl highest purity graphite crucible

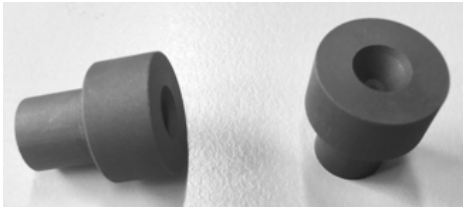
Vent-Medis Kits include the improved high-purity, high-volume carbon crucible with a 0.3µl bowl capacity. This crucible saves time and minimises multiple simmers allowing the use of dilute Tc-99m generator elutions thus reducing operator radiation exposure.

Rugged design smooth-bore patient delivery set



The inhalation breathing unit contains a high efficiency HEPA, exhalation filter, T-piece with robust non-return valve, a robust one meter smooth-bore tubing with 15mm inner diameter and the special generator connection. A rigid mouthpiece and a nose clip complete the set.

High purity and long life graphite contacts



With every Vent-Medis Box you get one pair of high-purity carbon contacts for 50 scintigraphic examinations. The carbon contacts are very robust and fit the Generator specifications with great contact reliability.

Vent-Medis Kits -

- Larger volume crucible equals more efficient use of dilute Tc-99m eluate
- High-Efficiency HEPA filter
- Time and cost saving
- Less radiation through reduced simmers
- Improved and more reliable crucible contact
- More rugged design
- Improved packaging
- TGA Certified
- Reliability of supply
- CE marked
- Major price advantage

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