



Steve Hardaker <viamed.steve.hardaker@gmail.com>

Re: TOF

1 message

Steve Nixon <office@viamed.co.uk>

13 October 2021 at 10:39

Reply-To: steve.nixon@viamed.co.uk

To: "COGGON, Mandy (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)" <mandy.coggon@nhs.net>

Cc: "LEE, Peter (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)" <peter.lee3@nhs.net>,

"steve.hardaker@viamed.co.uk" <steve.hardaker@viamed.co.uk>, "FLETCHER, Stephen (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)" <stephen.fletcher2@nhs.net>, "GLADMAN, Danielle (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)" <danielle.gladman@nhs.net>, "DHOKIA, Vishal (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)" <vishal.dhokia2@nhs.net>, "WRIGHT, Tina (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)" <tina.wright4@nhs.net>

Dear Mandy

Please accept my apologies for the delay in getting back to you. I am still awaiting some information from manufacturer's engineering/technical section, in the meantime I have added some provisional notes below in red text.

Dani and I have a couple of questions. At the moment it isn't that clear.

On slide 20 of the presentation it says don't calibrate if the patient is already relaxed (most of our patients are started on muscle relaxants before we can locate a TOF monitor) and on slide 23 it says rather contradictingly that it MUST ALWAYS BE CALIBRATED before use.

Sorry for the confusion, we agree that the slides are contradictory and they will be corrected to make them clearer. The TOF3D will still function if not calibrated and trended results will be observed, but to improve accuracy it is always preferable if it can be calibrated before muscle relaxants are administered. I am awaiting engineering feedback regarding the quantified readings.

I tried it on Dani- I calibrated it and then applied a 10MA shock. The screen showed 128%. Then I shocked again and it said 0. Surely this should say 4.

If the TOF3D is used on an unrelaxed subject then readings will be variable and you may well see high % readings as it is possible to have T4 readings above T1 readings, the ratio is calculated as $T4/T1$. Also if calibration hasn't been carried out then amplification of the signal and stimulus strength haven't been normalized by the calibration process, therefore the TOF ratio may then also be above 100%.

On an unrelaxed patient it is difficult and not really feasible to test and at low outputs. In a true patient scenario the reading should be 100% or less as NMBA is delivered, then reversed as the effects of the NMBA wanes.

Dani tried it on me and it said 4, and there was no 100% reading.

This is possible on an awake subject, see below.

I tried it on a paralysed patient at 50MA on Friday and received a 0 on the screen and no % reading. Does this mean he was over paralysed? Was it because I did not calibrate (as told not to due to him being paralysed) ?

If the reading is zero then this would indicate as you say a paralyzed patient. I believe that typically you can say that if 85% of all receptors are blocked you will get a TOF count of 0. For deep muscle blockade PTC mode can be considered, **after the PTC sequence has finished the monitor automatically reverts back to TOF mode.**

TOF (Train Of Four) as reference for muscular paralysis and recovery condition of the patient

PTC (Post Tetanic Count) for monitoring of deep muscular blockade

In a real life situation we would not always see such a gradual increase, but in principle when using TOF mode to monitor recovery, the following sequential display readings are possible:

Display

- 0 Paralysis - neuromuscular blockade. Either no twitches at all or all four below 3%.
If zero reading then PTC (Post Tetanic Count) mode can be considered. After the PTC sequence has finished the monitor automatically reverts back to TOF mode.
- 1 One twitch above 3%
- 2 Two twitches above 3% **Early recovery phase**
- 3 Three twitches above 3%
- 4 Four twitches above 3%, but T1 below 20%

If 4 responses are detected (with T1 >20%) TOF ratio is shown as percentage of recovery.

then gradual increases through to say:

50% **Median recovery phase**

then gradual increase through to

90% **Safe extubation phase**

then gradual increases through to

100% **Full recovery/non relaxed patient**

Please feel free to add comments regarding phases of recovery and clinical expressions for use in the ICU environment...

Regards

Steve Nixon

On Wed, 13 Oct 2021 at 09:00, COGGON, Mandy (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST) <mandy.coggon@nhs.net> wrote:

Dear all

There has been no decision from Dani or myself. We have used it on 2 patients and both times the results were variable and hard to interpret. Eg one patient was spontaneously breathing (ie not completely paralysed) and the TOF reading was 0 .

Tina and Vishal are under the impression however, that these HAVE been agreed.

Kind Regards

Mandy Coggon

Clinical Educator for Critical Care

Ext 4159



From: LEE, Peter (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)

Sent: 12 October 2021 21:38

To: steve.hardaker@viamed.co.uk

Cc: COGGON, Mandy (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); Steve Nixon; FLETCHER, Stephen (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); GLADMAN, Danielle (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); DHOKIA, Vishal (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)

Subject: Re: Thumb adapters for TOF 3D on their way

Hi Steve

Any update, this sort of delays us coming to a decision on the sor with a week lost, please can you be ready to extend a week or more as is required?

Kind regards

Peter D. Lee C.Eng MIET MIPEM

Consultant Head, Clinical Engineering Services & Trust Medical Device Safety Officer

Incorporating Medical Equipment Management Department (Memd)

Diagnostics and Outpatients Division

Kings Mill Hospital

Sherwood Forest NHS Foundation Trust

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On 5 Oct 2021, at 14:13, Steve Hardaker <office@viamed.co.uk> wrote:

Hi Mandy,

The quick start presentation appears to be structured around the use of the device prior to muscle relaxants being administered.

Steve Nixon has asked MIPM for their response to your comments and for specific guidance on the use of the device under the conditions that you have described in ITU, and will respond as soon as we receive further advice on this.

Regards,

Steve Hardaker
Technical Support Manager
Viamed Ltd.

Please note: Viamed is enacting a coronavirus contingency plan to allow sales and admin staff to work from home, and I am now working remotely. Telephone calls to the main office will be answered remotely, but please continue to use email where possible.

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On Tue, 5 Oct 2021 at 09:17, COGGON, Mandy (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST) <mandy.coggon@nhs.net> wrote:

Hi Steve and Steve

Thank you for the thumb adapters. We have been trialling the machine on a patient over the weekend.

Dani and I have a couple of questions. At the moment it isn't that clear.

On slide 20 of the presentation it says don't calibrate if the patient is already relaxed (most of our patients are started on muscle relaxants before we can locate a TOF monitor) and on slide 23 it says rather contradictingly that it MUST ALWAYS BE CALIBRATED before use.

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I tried it on a paralysed patient at 50MA on Friday and received a 0 on the screen and no % reading. Does this mean he was over paralysed? Was it because I did not calibrate (as told not to due to him being paralysed) ?

This is quite confusing.

Kind Regards

Mandy Coggon

Clinical Educator for Critical Care

Ext 4159

<image001.png>

From: Main Account [mailto:viamedinbox@gmail.com] **On Behalf Of** Steve Hardaker

Sent: 28 September 2021 17:47

To: LEE, Peter (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)

Cc: COGGON, Mandy (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); GLADMAN, Danielle (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); WRIGHT, Tina (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); FLETCHER, Stephen (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); Steve Nixon; DHOKIA, Vishal (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST); ROBINSON, Caroline (SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST)

Subject: Thumb adapters for TOF 3D on their way

Hi all,

Following on from our MS Teams meeting this morning, we have sent out 20 disposable thumb adapters to support the trial of the TOF 3D Neuromuscular Transmission Monitor.

This now allows you to trial the single-patient-use options of eyebrow and thumb adapters, and the reusable option of the hand adapter.

Peter, these are coming directly to MEMD by Royal Mail and hopefully will arrive tomorrow, the tracking reference is NL577518489GB .

Regards,

Steve Hardaker
Technical Support Manager
Viamed Ltd.

Please note: Viamed is enacting a coronavirus contingency plan to allow sales and admin staff to work from home, and I am now working remotely. Telephone calls to the main office will be answered remotely, but please continue to use email where possible.

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Steve

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