

## MRI Buzz Webinar with Barbara Nugent, Monday 10<sup>th</sup> February 4.30pm GMT

Opening Statements / Remarks:

Lexie - Hey Everyone!

Welcome to the 2nd episode of "Let's Talk MR Safety with Lexie" - UK MR Safety Special

Before we begin the show, let me ask you, can you list the number of current or past leading female figures in MR/ MR Safety/ Radiology? How about, you try and name, just 1 woman in healthcare leadership today?

I'll tell you. I have not one but 8 top women holding executive/leadership positions within different sectors of our industry.

The current ABMRS chair, also my good friend - Dr Heidi Edmonson

The current SMRT President – Dr Shawna Farquharson

Leading MR Specialist, educator, and author of the acclaimed MRI in Practice text that has been the go-to- registry prep for everyone sitting for the MR Boards - Dr Catherine Westbrook

Another Prominent MR/ MR Safety Specialist and business partner to Bill Faulkner, and also my dear friend - Kristan Brannock Harrington

Director / Chairperson of an entire Imaging Sciences Program, another dear friend - Dr Laura Vasquez

Past President of SMRT and the woman who works with 7Ts at Brigham, my sweet friend - Vera Kimbrell

Leading MR/MR Safety specialist, educator, and recipient of the AHRA Healthcare Leadership award, and one of the nominees / shoe - in for the Minnie's 2019 - Wendy Stirnkorb

And now joining me today is one of my best friends, recipient of the Scottish Radiographer of the Year Award in the House of Commons, three Career Learning Fellowships, Director of MR Safety Matters, named as one of the top ten global influencers of MRI safety, and most importantly, the woman who brought the First ABMRS Exams over to London, thereby bringing MR Safety Accreditation to the UK and Europe for the first time - Barbara Nugent -

Welcome Barbara!

Barbara's responses:

**Barbara - Thank you very much for the accolades and the invite Lexie. We all need role models and I count Heidi Edmonson and Cathy Westbrook as at least two of mine and I would like to add a couple of other women who have made a great contribution to improving MRI safety in Europe: Dr Anne Dorte Blankholm a radiographer who has been**

instrumental in Denmark in making her government aware of how best to address MRI safety concerns and has made huge strides in that respect; Muriel Cockburn, a Scottish radiographer who started the first branch of the SMRT here plus Titi Owman in Sweden, past president of the SMRT, and who has been so influential in promoting safety education too. Each of these women and all those you mention are all great examples of MRI Safety advocates and I have huge respect for them.

1. Lexie - What factors led to the formation of MRI Safety Matters®?

- Barbara - I had run a study day on behalf of the SMRT in Edinburgh in 2015 which covered all sorts of MRI topics, not specifically safety. It indicated a thirst for more MRI education, and I wanted to continue to provide that. However, like most radiographers with a lot of experience in MRI, I was aware that MRI safety incidents seemed to be on the rise and wondered whether the lack of a recognised or standardised MRI safety curriculum for anyone working in MRI could be contributing to incidents occurring. I felt that a study day concentrating on the topic of MRI safety would, therefore, be worthwhile. We need to all learn from each other and access the best resources from the international MRI community. In 2017 I was honoured to collaborate with Dr Frank Shellock to create the 1st MRI Safety Update day, in Edinburgh. With well over two hundred attendees it was a huge success. We also had the benefit of hearing from many leading UK and industry safety experts.
- It underlined that, while there's lots of excellent safety guidance and recommendations available from the MHRA, ACR, IPEM, SCoR, ISMRT, SMRT and BAMRR, as well as many others, and there are many standards that can be followed but there's currently no single, standardised educational safety resource to train anyone in MRI or to test their safety knowledge in the UK. I think that until we provide a minimum standard of safety education and, ideally mandate its introduction for anyone who works in an MRI unit, the workforce can potentially struggle in some cases to have the appropriate knowledge to deal with all MRI risks and hazards. After all, you don't know what you've never been taught. Most safety training tends to be done on the job relying on the experience and knowledge-base of each departments' MR Authorised staff, the more experienced radiographers, teaching the 'newbies' but if those staff, teaching others have themselves not received a comprehensive level of safety education in the first place, coupled with their ever-increasing clinical workload, this could mean that they have little time to teach and what they teach can become diluted or was insufficient or inadequate in the first place. So, following the success of the Frank Shellock event I believed it would be useful to develop a series of MRI study days aimed at radiographers, primarily, which put safety education at its heart. In order to do that and to answer your question, I set up MRI Safety Matters® and try to run at least one safety event a year.

2. Lexie - You always state that you think global networking and collaboration is so important for MRI safety, why is that?

- Barbara - The bottom line is that MRI is an evolving technology and we need to keep up to date with any new concerns. Inspired by the success of the American Safety

facebook group, and at the suggestion of Mark Keene from Metrasens and Laura Orchard, another radiographer who has done a lot to promote safety, I set up the UK fb group a few years ago. We now have over 2,300 members. These groups feed a need, globally for MRI staff to discuss safety concerns. What's also obvious from the posts on both groups is that our concerns are universal. By networking, we gain insights into how others may deal with similar issues. It can sometimes help us to stop re-inventing the wheel to address new concerns, If someone else has already come up with a solution. These groups have, I believe, become quite important for highlighting and risks and providing safety knowledge for the whole MR community.

- So networking and collaboration is vital and a year after the Sherlock event, I asked Dr Kanal if he would consider a trip to Scotland. I was delighted when he said yes, so in 2018, we had 'Spend the Day with Dr Kanal'. Each of these events underlined to me that wherever you work, in whatever role you have, we all appear to have the same issues reflecting the need for comprehensive MRI safety resources. Global experts agree, MRI safety is the number one priority for MRI scanning. The change in pace in technology struggles to keep pace with the changes required to ensure we know how to deal with the potential consequences of that technology but through global collaboration we can help bridge the learning gap.
3. Lexie - Recently, an article of yours, on - "The Need for MRI Safety Education in the NHS" - was published in Rad Magazine - Congratulations! You state in the paper that there's, currently, neither a recognized nor standardized MR Safety course available nor minimum requirements for MR training and education in the UK or across Europe. Why do you, respectfully, think that this is the case and why is it a problem? What are some of the challenges then that your radiographers and students face in their efforts towards achieving safe practice and obtaining MR safety education?
- Barbara - Without the existence of that single comprehensive resource representing a standard of safety knowledge required by staff, before dealing with patients, how can we ensure that an adequate level of safety advice has been received, by anyone working in MRI? One of the greatest challenges for staff is to work safely. Safety is of concern in any modality but in MRI, where a moment's forgetfulness, inattention or lack of knowledge can lead to devastating repercussions, safety is the number one priority. It seems to me that the one thing we all agree on globally is this need for standardised safety education.
4. Lexie - In the snapshot survey involving 100 MRI staff across the UK that you undertook, your research indicates that more than 70% respondents believed an accredited course of some sort, either online or in the classroom, coupled with on-site MRI safety guidance by experienced MRI staff, was the most appropriate form of training for most MRI personnel. Even more astounding, perhaps, was that more than 80% believed that only MRI staff who have successfully undertaken some sort of standardized MRI Safety training should be permitted to work in MRI – What did you think of these responses?
- Barbara - The statistics didn't surprise me, regarding the huge desire and need for safety education or that if a standardised level of education was taught that radiographers only wanted to work with staff that had such knowledge. After all, who wants to work with someone who is less safety-educated than ourselves or who does

**not know how to mitigate all the risks and hazards? What did surprise me though was the fact that so many respondents took the time to write in detail about some of the many issues they faced. This indicated that safety was a topic that was of great concern to them and they were invested in it wanting to improve the status quo for their patients, and as professionals, they want to learn more.**

5. Lexie - Following that survey, you collaborated with the UK MR Special Interest Group, Health Education England and the NHS, National Education for Scotland to develop the first online MRI Safety course for NHS MRI staff. Why did you choose to concentrate on dealing with anaesthetic patients for the first module?

- Barbara - Having had experience of working in a busy unit in an old building which was not so well designed for placing an MRI unit in it, I could see that from an MRI safety perspective, anaesthetic sessions were particularly challenging. In such sessions there are many potential safety issues which need to be adequately handled. Many of these concerns are common with any MRI anaesthetic session, in any hospital, whether it be for children or adults so any suggested safety measures could, be replicated in other units who deal with anaesthetised patients. The module also contained useful information in terms of MRI safety generally, so it was a good topic to start with to cover many basic MRI safety issues.
- In any anaesthetic session you have a vulnerable patient group who need appropriate checks done beforehand as well as the checks that must be performed when they are asleep and on all the accompanying staff and equipment, before and exiting from the scan room. In addition, you have a multitude of personnel whose primary focus is usually to be anaesthetic-safety focussed and not primarily MRI-safety focussed because for the anaesthetic staff involved, the MRI unit is not their normal working environment. This leaves the supervision of maintaining MRI safety during such sessions down to the radiographers. It's always demanding of staff and at times frustrating, especially with staff who attend the department on an ad-hoc basis. Visiting, non-MRI-core, personnel are, naturally, less familiar with MRI safety and so potentially inadvertently introduce another risk into such sessions. This risk always must be managed by the radiographer so it's a great deal of responsibility and any help that can be given to advise anaesthetic or MRI staff on the best processes to follow with any hints and tips during such sessions seemed a useful addition to MRI safety knowledge and an achievable goal.

6. Lexie - Can you tell us more about the "MRI General Anaesthetic Safety Pathway" that you describe in detail in the module?

- Barbara - When dealing with anaesthetic sessions, as stated, checking of the patient, accompanying staff and all the equipment needs to be meticulous. There must be a system of pauses for the checks to be performed, you must not be rushed, and then for good measure recording of the checks and pauses should be made. That way no step is missed, by anyone. The first check is done outside the Controlled Access Area as we call it in the UK or in Zone 2. Checking the patient's details, their screening form and the accompanying staff are checked too. Anything easily removable from the patient or staff that is contraindicated is ideally removed here. The patient and appropriate personnel then enter the Controlled Access Area or Zone 3. Once the

patient is asleep checks are thoroughly performed by the MR radiographer on the patient, from what's attached to them and what they are wearing to a full trolley check, from the top, under any sheets and under the trolley itself. This is to ensure that any contraindicated item is found and removed. The accompanying staff are double-checked too, again, to ensure that they have not suddenly placed anything ferrous such as a pen into their pockets. After each stage of checks the check is recorded. If there are any delays between the checks done in this area or where the radiographer has had to leave the patient for any reason, for example to set the scan up on the console, then the checks are performed again by the radiographer and recorded before anyone is permitted entry to the scan room. It's vital that any final checks are done immediately before the patient is taken into the scan room and again recorded. Before anyone re-enters the scan room to deal with or retrieve the patient the checks are done again on the personnel by the radiographer and recorded before anyone enters the scan room again. In this way no-one should have the opportunity to forget if they are about to take in anything contraindicated for example in their pockets.

7. Lexie - And following that online course you are now bringing accredited MRI Safety education to Europe - standing true to your research! Kudos! So, tell us, how did you come to organize the Kanal MRSO/MRMD courses and to bring over the ABMRS exams to the UK?
  - Barbara – The module was evaluated and the feedback confirmed a need for more safety education to be made available so after the 'Spend a Day with Dr Kanal' event I asked Dr Kanal if he would consider bringing his international course to the UK because I was curious if it lived up to the hype, and if so, what an opportunity for UK and European MRI staff to attend! Of course, I was thrilled when he said yes and so we ran the 1st European MRSO/MRMD course in London in June. We had almost two hundred attend and from feedback, I'm pleased to say that it did live up to the hype. Having found out a bit more about the ABMRS exams too it seemed a wonderful opportunity to bring the exam board over as well to test the safety knowledge of the delegates and at the same time introduce a level of MRI safety accreditation. Over two thirds of the course delegates sat the exams which also included the MRSE exam aimed at physicists and clinical scientists. So, we now have the first European cohort of MRI Safety accredited personnel. I'm also delighted to say that, IPEM, the Institute of Physics and Engineering in Medicine have now officially endorsed the MRSE exam. Professional endorsement is one of the goals to introducing MRI safety credentials and IPEM recognise the need for a standardised exam to test safety knowledge. I'm now very excited that we have both Kanal's 2nd European MRSO course plus the ABMRS exam board returning once again to London in June to create what will hopefully result in the 2nd cohort of MRI Safety accredited Officers, Experts and Directors in the UK and Europe.

Lexie - That's amazing! Manny's a great man and the most kind-hearted person. I met him in New York myself and I am so proud to see the return of the 2nd cohort of aspiring MRSOs / MRSEs, and MRMDs to Europe! I can see you are still taking in registrants.

- Barbara - Yes, we have about 100 so far signed up but can always accommodate more

Lexie - Barbara's still taking in registrants for the June 2020 Kanal MRSO/MRMD courses. Please contact her using the contact information in a brochure found at the end of this video and which, is also available on our site and affiliated social media handles

8. Lexie - While projectile events are quite the MR Safety nightmares for many of us, your paper on MR Safety in the NHS states that- according to MHRA, RF burns are the most reported incidents. What, according to you, are the top 3 MR Safety concerns that need to be immediately addressed today regarding patient MRI burn prevention?

- **Barbara – Preventing skin to skin contact. Appropriate and adequate padding of the patient of at least 5 to 10 mm from the scanner bore wall and to prevent flesh conductive loops occurring. Avoid clasped hands, crossed feet and ensure pads are placed in between the thighs and lower legs and between the thighs and hands.**
- **All patients changed into, ideally, long-sleeved pocketless tunic tops and trousers. This avoids skin to skin or skin to bore contact but also removes the risk that the patient has any clothing that contains metal fibres as found in some clothing now. The absence of any pockets will also help to reduce the many forgotten ferrous items that become projectiles.**
- **Understanding of scan parameters to modify the protocol to reduce the thermal load given to the patient. This means understanding the console alerts and how to implement cool-off periods.**

9. Lexie -We have been colleagues for the longest time Barbara, and I had the privilege of attending your many lectures, in one such Metrasens Webinar, you suggested the idea of pocket-less scrubs for us radiographers. You have been a keen advocate that specific MR Safe workplace clothing should be designed for all staff who work within an MRI unit and that patients should be changed into scrubs; can you tell us more about this?

- **Barbara - If we don't have pockets, we can't forget what's in them. It's as simple as that. Another alternative is to tape pockets up or wear tunic tops and trousers that have pockets, i.e. scrubs, inside out so they can't be tempted to put anything in them. This may be advisable for visiting staff, such as anaesthetists but for MRI staff a well-designed pocketless uniform looks more professional and is safer than one with pockets.**

10. Lexie - You recently also collaborated with Human Factors experts/ergonomists and published an academic paper in the Radiography Journal called - A preliminary ergonomic analysis of the MRI work system environment: Implications and Recommendations for Safety and Design. In that paper there is emphasis on the need to analyse MRI departments to consider the 'Human Factor' in relation to incident occurrence what does this mean? Why do you think that this paper, which analysed two typical NHS MRI units' working systems, is so important?

- **Barbara - A chartered ergonomist and human factor specialist undertook these site visits. Such experts can help to analyse all the factors which contribute to incidents. Ergonomists look at the whole workplace system, starting with department design, for example, are enough checks and barriers in place to reduce the likelihood of ferrous items reaching the scan room or that implants have been appropriately considered?**

What warning signs exist, are they fit-for-purpose and relevant? How are patients and staff encouraged to remember to remove ferrous items?

- There are many factors at play in departments, other than education, which influence safety culture. Ergonomists investigate all the potential influencers of safety to identify how the system really works as opposed to how it's supposed to work and to find out what prevents it from working as it should. They also help to identify what system checks, processes and physical prompts are needed to ensure safety. This paper is important because, as far as we know this was the first time that two departments had been analysed and compared using a holistic approach. It shone a light on how departments try to mitigate risks and how useful introducing the 'human factors' perspective could be in improving current incident prevention strategies.
11. Lexie - Dr Kanal, in one of his many lectures, once shared a conclusive summary to the data collected by our very own Tobias Gilk - which stated that, MRI is the only modality, where despite learning and understanding more about it over time, the MRI-associated adverse event rates does not significantly drop, but may even be increasing! - What is your personal take on why this is happening?
- Barbara - Yes, the more scanners there are the more incidents occur. It's widely believed that safety incidents occur more regularly than is reported in most MRI units, especially near-misses but the recording, of them, especially of near-misses is rarely done. There are many reasons for this, not least that it can take up a lot of time to physically report incidents, taking the radiographer from clinical scanning. In the reporting systems, there may often not be simple and appropriate categories available for MRI specific incident reporting to be done. I have seen systems with no category for MRI burns or projectiles and even one that labelled MRI incidents under radiation events.
  - In effect, what we predominantly see is only reports of serious incidents where equipment has been damaged, or where patients have been hurt being recorded. This means that we don't get to find out about the 'near-misses', the 'very-nearly-events' but knowing more about these is just as important because if we don't know about them how can we ever learn from them to stop them happening again and again? How can we identify any trends to identify common problems?
  - In Scotland, the MRI Lead radiographers have devised a simple table for reporting incidents, which if replicated in all units would mean less time for reporting but more importantly it would help to identify common themes. If anyone wants to know more about this table, I will add it into the MRI Buzz website. There also needs to be a 'no-blame' culture attached to reporting of any incident, as it's never one reason or one individual that's responsible for an incident occurring. In any incident, steps could have been put in place to stop the incident occurring in the first place. Until the whole MRI working system and incident type is analysed and a culture of reporting incidents is encouraged, it's difficult to see how we can devise appropriate safeguards for every possible safety incident that can occur. So, potentially entirely preventable incidents will continue to rise unless the reporting of all incidents is forthcoming.
12. Lexie - On a different, but related subject, as you know I have a hearing impairment and a lot of experience with how autistic people see the world. I had reached out to you and others on facebook to ask for advice on how to encourage patient compliance, since

then, you and I have put together a presentation using our experiences detailing some hints and tips on how to encourage patients to have their scan. I'm excited to be doing this with you and can't wait to present it on our website. How important do you think this topic is?

- **Barbara** - That was a really good question you put out on facebook, thanks for that. Encouraging patient compliance is one of the most vital skills to learn in MRI. We all came into radiography to help people but encouraging anxious patients to lie and stay in the scanner can be a challenge. I'm so pleased to be able to work with you on that and to provide any hints and tips on this subject and of course we will seek expert advice from many sources. At the end of the day we are all working to provide a safe and satisfying service for patients, our colleagues and ourselves. Any useful advice that we can learn from each other can only benefit us all.

#### Closing remarks

Lexie - And on that note, we end today's episode on all things UK MR Safety with Barbara Nugent! Thank you so much for being here today Barbara.

Women are so underrepresented at the national, foundational, and executive levels. But that is changing now, and it is an honor and a privilege knowing leading female industrial figures like you!

If all of you like today's taping - Please do not forget to like, comment, share, and subscribe. Also, do register for the upcoming UK Kanal MRSO/MRMD courses organized by Barbara here as Director of MR Safety Matters.

A written transcript of today's webinar will be up on our site in 48 hours.

You may also contact Barbara for any questions you may have with regards to her upcoming UK MR Safety events and/or MR/MR Safety topics.

I will see you next week with a new guest and a new topic, as part of MRI Buzz' new MR Safety Education for Change Initiative. Goodbye for now!