EMDR and the Psychology of Persistent Pain

Webinar 10th January 2022

David Pyke

EMDR is growing very fast. There are a lot of variations; no-one quite understand how or why it works and there is some controversy about this.

I have been using it for complex PTSD and pain patients for several years now, including ten years online. I am still learning with very patient I see. I am not going to teach you how to use it and this is just an introduction. It is possible that you may be affected personally with something I say. Whenever I attend an EMDR conference I am shell-shocked by so much raw trauma and emotion. Humour can help to defend ourselves from this, but if I use humour or seem to make light of serious things do not mistake me – I am really serious about this work.

I hope after this session that you will be able to understand the role of trauma and emotional intensity behind the experience of some pain, and the way that EMDR can help to find what this is for a particular person in their own history, including that of early trauma and ACE’s; and to see how EMDR can ‘dissolve’ some pain completely and relieve suffering when this is not possible.

 I am not touting it as a panacea for all pain, but it can be extraordinarily powerful, and I hope to share stories with you to demonstrate that.

EMDR stands for Eye Movement Desensitisation and Reprocessing. It was invented by Francis Shapiro ( who has always regretted coining that because it is such a mouthful). She is an American psychologist who had herself been diagnosed with cancer and was very into the use of visualisation techniques and that sort of thing for helping cancer patients, but which didn’t seem to be working for her.

In her own words:

“The tree of EMDR sprouted one sunny afternoon in 1987 when I took a break to ramble around the small lake in the spring. Ducks were paddling by and blankets with mothers and infants were spread out on the wide green lawns. As I walked along an odd thing happened. I had been thinking about something disturbing – I don’t even remember what it was – one of those nagging negative thoughts that the mind keeps chewing over, and the odd thing that happened was that this had disappeared on its own. When I brought it back to mind I found that its negative emotional charge was gone. Like one of my heroes Mr. Spock in Star Trek I had always found emotions a challenge but had never noticed such a quick shift in thoughts and feelings before. I had been using myself as a laboratory for mind-body investigations for eight years and this change certainly stimulated my interest. I started to pay careful attention as I walked along and noticed that when a disturbing thought came into my mind my eyes started moving back and forth, making rapid diagonal movements from lower left to upper right. At the same time I noticed that the thought had shifted from consciousness, and when I brought it back to mind it no longer bothered me as much. I was intrigued and tried doing it deliberately. I thought about something else that was causing mild anxiety and this time did the rapid eye movements intentionally. This thought went away too and when I brought it back the negative emotional charge was gone.”

That is known as ‘The Walk in the Park’ and almost all EMDR therapists will use that as an introductory story.

Processing is of course not new and almost all forms of psychotherapy involve some sort of processing of negative emotions, but Shapiro noticed that when she did this thing with her eyes *it happened by itself.* She went on to research it and inflict it on her friends and family and share it with her colleagues, and it got bigger and bigger. There is now a big body of research into the mechanisms which you can find on the internet so rather than going into this I want to tell you about my personal experiences of using it for pain. But there is a theoretical underpinning to it and a lot of good work on it going on. This includes RCT’s and things like that; it is very difficult to do these in this sort of area but no lack of attempts to bring the research up to this gold standard but there is a big evidence base. NMDR practitioners are very sensitive to the accusation that it might be voodoo and weird – it is weird but it works! It has become part of celebrity culture; Harry and Meghan used it to help cope with the stress of coming back to London; but I don’t want it to be tainted with the brush of celebrity because celebrity will pick up and popularise fashions which will be replaced with something else before long. So is it something that will persist or will it be gone in a few years? This is something we can discuss, but as it not only works but has become very powerful people are very excited about it, especially those on the receiving end for whom it has worked and want to share their experience.

In the UK we have the NMDR UK organisation which controls and regulates, and in effect licences practitioners. All practitioners who are accredited, be they consultants or trainers or whatever, are already psychological practitioners of some kind: counsellors, psychotherapists or clinical psychologists with appropriate accreditation as therapists in their own right, and you don’t get into training into NMDR without this. So it is not generally available for others. The fact that previous training in psychotherapy is so to speak built in to NMDR training can be a good thing but one result is that there can be a pyramid with a few people training and a lot of people wanting to be trained.

The chief thing it is useful for is helping people to deal with traumatic life experiences which do not resolve with time. The term PTSD evolved in the US at the time of the Vietnam war when veterans came home having not only been through terrible experiences but were also not welcomed back by a society who hadn’t agreed with the war. So they had got traumatic experiences that weren’t acknowledged and did not resolve with time. The experience is not new – the same phenomenon was seen in previous wars and was given different labels like shell-shock (and cowardice) and people have been having traumatic experiences throughout human history, but the thing about PTSD is its non-resolution. You can think you are over it and then something triggers it and … bang!... you are right back with the IED exploding and killing your friends or whatever. So these life and death experiences are extreme emotions and NMDR is a way of handling those so that the person can deal with them; whereas normally they get stuck and put away behind a steel shutter and go on affecting everyday life.

So what is NMDR?

Firstly what it isn’t: although it basically involves moving your finger from side to side , changing the speed and direction and getting the person to follow your finger, the idea that my waving a finger is going to make you better is quite wrong. You have to remember that Francis Shapiro was a trained psychologist and had been working on this for many years before the walk in the park. So the important thing is not waving my fingers; it’s what I have done before and what you can’t see that has an effect.

 I am often asked if it is hypnosis which it is not. I do not use hypnosis: when I was a student we formed a clandestine group to study it (it was not ‘respectable’ at the time) and traditional ways of trance induction, creating post-hypnotic suggestion etc. and I came to the conclusion that hypnosis was indeed powerful. But I decided not to use hypnosis with clients because if the therapist implants a suggestion that they will feel wonderful when they awake that isn’t really the goal of therapy, and may not be of lasting benefit. It’s not an authoritative suggestion from me; I want the person to know what happens and be able to do it themselves if they need it and be more in control of their own lives. If anything what I am doing is trying to ‘de-hypnotise’ them because when someone has a huge and shattering traumatic experience which is way out of their ordinary belief system and they haven’t time to understand what is going on they end up in a kind of trance state - a kind of autopilot.. And in that state they are in effect working off a post-hypnotic suggestion based on the decisions they made at that time, and if it happens when you are three or four years old, running the rest of your life on this may not be the best for you. In this sort of trance state someone may act without understanding what they do or how not to do it and also be very distressed by it. So I want to give someone more control.

 And it’s not a ‘talking therapy’. Before I encountered NMDR I thought it was the magical me talking to clients that was making them better. The key element in NMDR is not what the therapist says to the client that makes a difference but what the client is saying to themselves. Part of the underlying model behind NMDR is that the mind is built to heal itself in the same way that the body does. But the body doesn’t heal itself perfectly every time and there are lots of things like misaligned long bones that can go wrong. So the mind’s healing may not always be perfect. It has lots of ‘emergency packages’ which can get you by and ensure you survive. Just talking to someone who has survived powerful trauma … if you’ve survived a car crash in which someone else has been killed ( I have met and helped people who have had equivalent experiences ) … you have got to know what it feels like to be able to handle that. If you are talking to someone and they think that you are not getting this they will thank you and go off to someone else or conclude they can’t be helped. But it’s not the talking that helps NMDR to work; it’s what is going on in the client’s head.

 And it’s all about setting it up so it does work. Preparation is vital and without it you are

 not going to get a result; indeed you are in danger of making things much worse. There is

 a lot that can go wrong if someone tries to do it without understanding what it is all about.

Clinical examples

I learnt from the last webinar [A New Classification of Pain by John Loeser, December 2021] to stop using the term ‘chronic pain’ as if it were an entity. ‘Persistent pain’ can be pain that has gone a long time which is organic and a physical problem which isn’t necessarily psychological, including some musculoskeletal pains, neurogenic pain and pain of central origin. NMDR doesn’t work for all pain.

To take MSK pain: Two typical examples: a housewife who has to get her 75-year old mother do her housework because of her back pain. A lorry driver who has been injured in an accident and has back or other pain preventing him from ever driving again. There are distressing psychological aspects in these - the embarrassment for the housewife who feels she should be looking after her mother, and the loss of employment and income for the lorry driver. These kind of MSK pains can be dealt with successfully with NMDR and I would expect them to resolve very quickly, indeed with six sessions or fewer.

 Neurogenic pain like post-herpetic neuralgia or CRPS which can be incredibly painful and inescapable and can even lead a sufferer to contemplate suicide - not only to get rid of the pain but to relieve friends and family of the burden of witnessing and hearing about it every day. I find that NMDR is unlikely to help resolve such pain but it can ease distress and can help someone who is suicidal. And it (and other forms of psychotherapy) can reduce the intensity of the pain to a point where they can find solutions in life short of suicide.

Central pain which doesn’t appear to be linked to damage in the periphery includes Fibromyalgia, and people with this often find that not only is the pain itself difficult to handle but also the communication of it to doctors who may give the impression that they think they are ‘making it up’ or malingering. It is ‘functional pain’ – medical jargon which evokes all these negative beliefs in response to it. Which doesn’t help. I worked with an eminent spinal surgeon once who had a number of ways of diagnosing malingering. He was convinced that any man coming in with ‘John Lennon’ spectacles (the little round ones) was malingering and therefore he would give them a very painful examination so they would learn not to put it on again. About the only excusable thing about this was that it saved them from an operation with a very low chance of success.

 My point is that there are different psychological mechanisms behind pain. I have two case studies to illustrate this:

The first is Fran Stalley [who participated in person in the webinar], an ex-client of mine with complex PTSD with whom I worked for a long time; she had had long-term back pain ever since childhood and a dramatic resolution of that. [In her own words:-]

*“I started back pain as a teenager; it continued into my twenties and worsened in 2009 when I was in my thirties with periods of severe pain lasting several weeks about five times a year. There was one episode where I was lying on my stomach on the floor all night. Every half an hour my back was going into spasms and I had to call an ambulance because I couldn’t get off the floor. I couldn’t function but I didn’t want to take painkillers so I didn’t help myself. I was examined by a chartered physiotherapist who told me she didn’t know why I was having these episodes. I didn’t have any scans or anything.”*

(There are a lot of people with incidental findings of pathology on MRI scans who don’t have pain - the …… [peroration?]…. of causality which I shall come back to later … making meaning out of something like statistics which may have no useful or predictive value.)

My turning point came when I started work in a pain clinic after quite a long career in clinical psychology and realised that, looking back, I hadn’t understood what trauma was. I had tried to help people with back pain in my clinic and found that none of the techniques I had learnt did anything to take the pain away. I just didn’t know what to do. I adopted a psychological device to protect myself which was to abandon any expectation that I could do anything at all to help these clients. This can be a helpful tactic. So all I did was to try and find out as much as I could about the patient as a person, and anything else was a bonus. But I had no idea what I was doing. I was involved in a project to bring psychology into the outpatient clinic in my hospital. I got varying reception from different consultants in different specialisms but when I went to Ralph … [the pain consultant] he welcomed me if I thought I could do anything with his patients. So I had a lot of experience with a lot of different clients and had to evolve ways of dealing with them, including Pain Management Programmes, at a time when these things were beginning to come into mainstream pain medicine. But it was tough as so many were the ‘heartsink’ patients that make you feel useless.

 Back to Fran: Could you describe briefly the EMDR set-up we had and how it helped your

 pain?

“*I wasn’t seeking help for the pain but for my complex PTSD, but I happened to hurt my back on the morning of the therapy session, so we spent that working on my pain instead. We used the* EMDR *in the context of my work … pain had been a problem for the whole of my working life. After that session I sobbed uncontrollably – I thought I was never going to stop crying. That was nearly six years ago; my pain got better in eight days and I have not had that kind of problem with my back since apart from one session which lasted a week and a few brief twinges”*

You had done a lot of work on yourself and you were used to processing. Can you describe the experience?

*I didn’t know what to expect. I had heard that EMDR could be used for pain* but I *wasn’t* *hopeful. You told me my pain would get better over a week but I didn’t believe you*

 *We used a light bar with lights going backward and forward, over a video link.. Every few minutes we stopped and you asked me what was going through my mind.*

So the next thing we had to do was desensitisation. The key thing about your pain was that it was a defence system that was crippling you which had started in your childhood. ACE’s (Adverse Childhood Experiences) give rise to fear. And you have to approach the thing you are frightened of but you may not even know what that is. Your body going into spasm was like a reflex to protect you as fear is designed to keep you safe.

 Without going into detail , you had some very disturbing aspects of your childhood, didn’t you?

*Yes*

These defences are primitive, powerful, primitive and uncaring. When you meet the thing you are frightened of you go into ‘fight and flight’ and have two alternatives: one is to run away from it and the other is to face it and fight it. But these are working against each other under tension and because neither of them will work, and you freeze. If you can get away from it you try to make sure that you are not going to meet it again. It has now become a reference to a traumatic memory which has never been explored.

In the preparation for desensitisation I helped Fran to get into a safe place. It was of key importance that she should have the sense that she was always in control and able to enter this place. You can’t process a memory unless it’s in an emotional window of tolerance. If it’s too extreme and scary your mind won’t let it come into your waking consciousness, or you will freeze. But you have to have sufficient activation to bring the nasty thing under control. If the pain is representing a very extreme memory but you have no conscious memory of what happened, you have to bring it into the window of tolerance; your mind will accept that it’ safe now so you can talk about it and the fight or flight response will no longer be necessary.

Fran – can you add anything about how you felt when we were doing the eye movements?

*It was very weird in the sense that it wasn’t what I was expecting.*

So with NMDR, when we get to the crux of it we build up to a safe place and then you can start to work on yourself. So what was it that you believed about yourself that you didn’t like?

*I couldn’t do work that I enjoyed or support myself. I felt helpless and hopeless. But all the same I still wanted to be successful.*

Those two elements of negative and positive cognition and moving from one to the other is the essence of psychology. People don’t know why the negative cognition is there but once you process it with NMDR it releases energy and re-establishes your sense of self

*I no longer felt that there was no-one to turn on for help - something I had experienced in childhood, as well as violence .*

Discussion

*Does EMDR help pain only when there is complex trauma, or does it help in other cases?*

The more I do this work the more I realise that trauma underlies all psychopathology; but also that as part of NMDR practice you are locating sensations that are linked to the body, and we aim to clear these. So, for instance, if you say there is tension in my throat and you clear up a lot of psychopathology but the tension is still there, and then you use NMDR it clears by going back to the memories that were behind it. The theory is that all pain is an expression of trauma, but not all is accessible this way. One problem is that a lot of trauma occurs before an infant is verbal. At this stage we learn by association.

*But you’re not suggesting that someone in pain from an arthritic hip joint in need of a hip replacement is going to get better with NMDR* ?

They might do. It is possible that emotional black moods if not resolved can express themselves in the body, and it might be possible to shift even arthritic pain. But not everyone with this is going to do or want to do *NMDR*

*Is there a connection between NMDR and ‘tapping’ (EFT- Emotional Freedom Therapy or Technique\* )?*

The difference is that EFT is ‘outside’ and *NMDR is ‘inside’.* There is a lot of anecdotal evidence that EFT works; part of the mechanism may be the distraction of attention. With *NMDR* , in the instant you are moving your eyes from one finger to the other you ‘blank out’. My theory is that in that moment you are in your ‘calculating brain’ .

 Neuroplasticity of the brain involves making new connections, and we are realising that it is far more capable of this than we thought. One theory is that our body image is located on the sensory cortex. When I think of my foot I don’t go to my foot but to the map in my brain. But in certain circumstances they don’t match and the pain is directed downwards from the brain and we can modify that body image quite rapidly with things like *NMDR*

 *I'm going to be doing EMDR in the hospital I work in on a project working with people awaiting hip and knee operations to help people between the preop stage and post operative stage to manage their anxiety around pain and their operation. It'll be interesting to see the results.*

*\**https://iceeft.com/what-is-eft/

We are thinking of the thoughts and emotions of someone going through that. You can handle expectations of the outcome. If for instance you have a knee replacement you can go back to full function. It depends on how much your identity is linked to the outcome, and if this isn’t good you are not ready for it. NMDR can help to handle the uncertainties and fears of going into hospital which can involve, for instance memories of having tonsils out in childhood by locating targets which are relevant to going into hospital, so people can sort out what is the ‘real’ fear like needles and what is not.

*Could you be more specific about who is eligible to train in EMDR? (I am a mental health nurse)*

My understanding is that you have to have some kind of mental health qualification and belong to a professional body. I belong to the British Psychological Society. A degree in psychology fits you for nothing and I have done a post-grad in clinical psychology. There are other recognised bodies such as the BACP (British Association for Counselling and Psychotherapy) which should allow you to do NMDR training. I think this is too restrictive and I’m not sure that without a qualification in psychotherapy mental health nurses would qualifiy.

*Is there any published high quality evidence that EMDR for pain is better than placebo?*

RCT’s involve comparison with a placebo but it’s very difficult to do placebo NMDR and we are using the placebo effect. But this is not the only research design available. Drug companies publish comparative trials to show that their new analgesic, for instance, is better than morphine which will relieve 50% of pain but this will relieve 60%. (but placebo will relieve 45%)

 So what we are doing is harnessing the imagination to the power of the brain.

*I have been researching knitting as a therapy for a number of years and there are lots of stories of people with symptoms of PTSD improving in terms both of number and intensity of flashbacks, and ability to think through these things without the emotions. Knitting was actually used as a treatment for shellshock after WW1. I think the mechanism are very similar to those of NMDR.*

I think they are. They both involve distraction of attention and ‘taxing the working memory’ (the latest theory – I’m not so sure about that) But the key thing is that it is rhythmic and that the front of the mind – the attention - is on the knitting even if it has become automatic. It allows you to relax inside and begin to think through … it’s like a good holiday from a stressful job. You are refreshed; your mind has been working in the background. If it is really extreme that will work. Walking is also a bilateral stimulation and will tend to set you up into that frame of mind where it is working on and dealing with things. The difference with NMDR – one only of magnitude – is the power of setting it up.

So if someone is prepared the right way and opens themselves to the possibility that their mind will look after them they needn’t worry about what comes up. Normally if you are troubled you will want to talk to your friends about it, or you may even seek counselling. A problem shared can be a problem halved. If you go into the realm of extreme trauma and start opening that steel barrier the intensity of those emotions is such that if it’s not handled right you don’t end up with a positive – a problem shared can be a problem doubled. The trouble with talking therapies is that with extreme trauma like soldiers’ experience in Vietnam, if someone forces that without you being in control of the situation it will make it worse and you will leave the therapist because you don ‘t feel safe. NMDR can bring down strong emotions to within the window of tolerance.

*I think what you are saying is that an important context “triggering” the mechanisms within EMDR is the set-up of safety and containment?*

You take a history and whatever someone tells you about the history it’s not that – it’s what they haven’t told you that is important.

*My experience of using basic hypnosis in the pain clinic suggests that there are a lot of parallels with what you have been describing. You pointed up some of the difference but in many cases allowing an approach to problems that have arisen in the past and have resulted in ‘paralysis’ – not being able to move backward or forward. Being able to think about things presumably leads to the reprocessing that you were talking about. So I see that in some respects these are similar ways of allowing people to get on and reprocess …. Nothing changes physically except the ability to live with knowledge that may have been paralysing you in the past. Knitting … tapping … eye movement … I suppose we do similar things in hypnosis,*

 *My question is this: if we had an EMDR therapist in every pain clinic which patients would be best sorted with this? I am interested in the fact that neuropathic pain might not respond, because in my limited experience of hypnosis those patients who have a burning limb we can help to re-imagine that as a cold limb. And when treating burns one of the hypnotic strategies is to imagine you have snowballs fired at you.*

Yes - NMDR works well with musculoskeletal pain but for central neurogenic pain imaginal techniques are better at giving you a break from the pain. So the pain isn’t going to go on for ever with no escape. But you can enhance those imaginal techniques with bilateral stimulation, including eye movement. Auditory sometimes works better than visual for this.

A lot of brain science focusses on the cortex – sensory, visual etc. – but the neocortex, the limbic system and the brainstem work together. The survival brain is the brainstem, associated with pain and rage (think of decorticate cats). When the brainstem is activated the cortex shuts down. That has to be modified by the limbic system which has more to do with ‘group’ matters – am I liked, am I included – if not I am isolated and the predators will get me; and the interaction between the limbic system and the neocortex means that if you have memories in the limbic system they are activated because they produce emotion whenever you bring them up. If you process them they turn into memories which you can look back on without them affecting you. NMDR ca help move them into the cortex where they become processed and no longer disturbing. I find this interrelationship of the brain regions has great explanatory power.

*May I make a comment in defence of hypnosis? I used it a lot for pain in my practice as a GP. It doesn’t just work during the session as you have implied. You can make suggestions that the cooling or warming etc. will continue afterwards. And I used it for neurogenic pain.*

*I have done NMDR training and I was surprised how much they acknowledged its sources from hypnosis.*

I’m not knocking anything that works with pain and suffering. I was only explaining my own personal perspective: one of the elements of NMDR is that when you are doing the processing the person is always *there*, even if they are going into memories of childhood; what is called dual attention – you are in both the present and the past. Your mind has got to resolve that. The key to that is that when you are doing the bilateral stimulation the person can say “stop” if it’s too much. They are in control of the situation, and *they are controlling the trauma.* They can go on if they wish and more memories may emerge.

But if I am setting up the scene hypnotically there is also a danger that my mind may try to predict what it is they are dealing with. My view of Freud’s practice is that it was really good until he starts to use his own mind and starts to interpret what the patient is saying. If I try to this I often get it wrong

*Desensitisation works for many people but doesn’t work for a large percentage – about a third*

I had one lady with whom I wasn’t getting anywhere with NMDR. But there was a situation in her life that was behavioural. So I went back to behavioural therapy and working in vivo with the things she was frightened of and doing desensitisation without NMDR. It partly depends on the chemistry between you and the client

*Has there been any research into the neurophysiology of NMDR? – such as fMRI to discover which parts of the brain are involved – presumably the visual cortex is at some stage?*

Yes. One thing that we have learnt from that is that the same areas light up with imaginary fears as real fears. In essence we create a map of the world; if we go into a room and try to take in everything at once every time we go into it there is too much so we build a map and look for the differences. We work on that picture – that hypothesis mind, and when it works well we don’t notice it. But when it doesn’t work that’s when we are in trouble.

 *With regard to history: one of the things I liked most about David’s approach was his*

 *helping me to an understanding of why I responded in the way that I did. Although I had no*

 *memory of my childhood abuse I often thought – “ Oh – that’s why I couldn’t make friends*

 *etc.” I realised that I was missing a large part of my childhood.*

*Has it been used for holocaust survivors? – and if so with what success?*

It has, but I don’t know the success rate. .NMDR is very big in Europe and especially in Israel. When they were getting the rocket attacks they found that NMDR could be used as a crisis intervention within minutes to prevent future stuff happening. But yes, it has been used with holocaust survivors and refugees. Therapists have been going out to Iran and Iraq and all sorts of places to train the local people in NMDR so that they can deal with the effects of disasters.

There is a charity which supports this: <https://www.traumaaiduk.org/>

References and links:

<http://emdrassociation.org.uk/> (Professional accreditation, UK)

<http://www.emdr.com/> (*Getting Past your Past*, Francine Shapiro)

<https://overcomingpain.com/> (Mark Grant pain protocol)

David Pike dpike@consultant.com

Fran Stalley franstalleyexpertpatient@gmail.com

<https://pubmed.ncbi.nlm.nih.gov/25123377/> **Neurophysiological correlates of eye movement desensitization and reprocessing sessions: preliminary evidence for traumatic memories integration**

[Benedetto Farina](https://pubmed.ncbi.nlm.nih.gov/?term=Farina+B&cauthor_id=25123377) [1](https://pubmed.ncbi.nlm.nih.gov/25123377/)  [2](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Claudio Imperatori](https://pubmed.ncbi.nlm.nih.gov/?term=Imperatori+C&cauthor_id=25123377) [1](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Maria I Quintiliani](https://pubmed.ncbi.nlm.nih.gov/?term=Quintiliani+MI&cauthor_id=25123377) [1](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Paola Castelli Gattinara](https://pubmed.ncbi.nlm.nih.gov/?term=Castelli+Gattinara+P&cauthor_id=25123377) [2](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Antonio Onofri](https://pubmed.ncbi.nlm.nih.gov/?term=Onofri+A&cauthor_id=25123377) [2](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Marta Lepore](https://pubmed.ncbi.nlm.nih.gov/?term=Lepore+M&cauthor_id=25123377) [2](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Riccardo Brunetti](https://pubmed.ncbi.nlm.nih.gov/?term=Brunetti+R&cauthor_id=25123377) [1](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Anna Losurdo](https://pubmed.ncbi.nlm.nih.gov/?term=Losurdo+A&cauthor_id=25123377) [3](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Elisa Testani](https://pubmed.ncbi.nlm.nih.gov/?term=Testani+E&cauthor_id=25123377) [3](https://pubmed.ncbi.nlm.nih.gov/25123377/) , [Giacomo Della Marca](https://pubmed.ncbi.nlm.nih.gov/?term=Della+Marca+G&cauthor_id=25123377) [3](https://pubmed.ncbi.nlm.nih.gov/25123377/)

2015 Nov;35(6):460-8.

doi: 10.1111/cpf.12184. Epub 2014 Aug 15