



Questions for Marjolein Verly

1. What is the age range of the target population for the space training?

4 – 10 years mental age

2. What is the success rate of this training / what is the percentage of success?

We have a quite high success rate: +/- 90% if not higher. However there are a lot of parameters that determine whether the awake scan is a success or not: duration of the scan protocol, motivation of the child and the parents, contrast injection or not...

3. Do you have multiple scenarios for children who undergo multiple MRIs?

We have! We do have an alternative with a castle and a knight, prince, princess.

4. Are the "astronauts" sober?

No, which is an advantage for the child too.

5. How long does the "familiarization" with the MRI-procedure take?

Approximately 15 – 20 min.

6. How high is the conversion rate during the MRI session in a really sedation because of the agitation of the young patient?

I don't really understand this question. If the question focusses on the process when the awake scan is not a success, than a new appointment has to be made for a scan under anesthesia. It is not possible to sedate the child at the moment itself due to our clinical workflows.



Questions for Stéphanie Gollut

1. Beautiful talk! How do you get parents to not do the 'wrong thing' such as empathizing?

I inform them about the procedure, the way the kid can act etc..

Then I explain before the procedure what is the best way to help the child : to work on their own anxiety, to trust the child's resources, to stay there, to promote distraction, to encourage him to breath and show how to do it etc. I make myself clear before the procedure about the results of studies explaining which language is helpful and which isn't. Most of the time, parents want to make their best so they'll try to do what is better for their child if explained. During the procedure, if it doesn't go well, I redirect the talk or I tell the child the things I want to be said or I try to lead the distraction.

2. How did you measure fear and pain in your study?

The questionnaires received by health providers and parents/child had questions as : "How the way he was talking to you changed the feeling on fear, pain, discomfort"? With a scale from 0 to 4. We measured the difference after each intervention (standard communication, therapeutic communication, hypnosis).

3. Nowadays, in the covid-crisis, I experience more difficulty in using body language, like face expression. How do you cope with that?

That's quite a hard time...

I'm surprised to realize that having some masks on is less impactful on communication that what I expected. I have the impression that children are more sensitive to our voice, our body expression in general and to our eyes. I use the surprise, the "humorous talk", i still and even more touch them and try to "talk" more with my eyes, more facing them.

4. Can I read about what words not to use?

I can send you some references, please send an e-mail to helpdesk@klinkhamergroup.com

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5. What do you think about combining any of these techniques with some kind of sedative drug. Does it work, or does it make counteract the patients ability to cooperate. Perhaps some low dose of dexmedetomidine?

In some cases, sedation won't be necessary. If needed, the first step is to have the child reassured and not to start it when the child is too anxious when possible. If the sedation goes on well and soft, the adverse effects or abreaction have less probability to manifest.

Hypnosis talk /therapeutic communication goes well with MEOPA or with low sedation.

6. How did you implanted the comfort talk in your hospital and keep it alive? I notice in our hospital the change is difficult because a lot of nurses and doctors are stuck in there old habits. And I like to spread the word further then the OR.

The 2 days communication training started in 2017. The department managers helped with it by sending the staff and having them replaced for the 2 days training. The return of the trained people was very positive (easy to practice and ameliorate the perception of the care).

Having everybody around trained lead to have less and less people that are not convinced about the need to change. For sure there is still some people who won't change but it's a minority. To show the example of therapeutic talk and the effects on the child is the best way to convince people. But the change need time and repetitions, the habits are well implemented (the nurses learn at school that they have to warn the patient before venepuncture etc..). But we also had the feeling that some refresh need to be made. We go in units and listen to the nurses and doc, we teach at the bedside.



Questions for Søren Walther-Larsen

1. I think it is a kind of aggressive game. Shooting sea gulls. Do you use less aggressive games?

The player is shooting sea gulls with water balloons in the first game. We have given it many thoughts, have had in total one reaction on the internet, but not from families. Not an excuse, but compared to what children are exposed for, we found it acceptable. In our next game with the frog for 4-6 years old children it is less frightening, I guess. Designing the game with Khora (the VR company) avoiding any side-effects (nausea, epilepsy) was important to us.

2. Do you advice explaining to the children what is going to happen? I mean explaining the (painful) procedure? Or just say we are going to do a game, give them the VR and then just perform the procedure?

We tell children – adapted to age and cognitive level – that we now put on a rubber band, clean the skin, etc. but keep on talking about what is now happening in the game.

3. Very interesting! How do you sanitize the VR visors?

Good point in these Covid times. It has been a concern to a level that we paused using the equipment during Covid peak in spring. We now wipe the goggles in between patients with antiseptics, exclude patients not “healthy” and which are immunodeficient or whenever there seems to be a risk. As come to Covid, I suggest you develop a hygiene concept and a risk assessment with the involvement of local authorities - the Corona Task Force of your hospital?

4. Do you have special equipment for the smaller children (3 or 4 years old) because the glasses we have in our hospital would be too big for them. From what age do you think VR is possible / valuable?

Our new goggle is lighter and with straps over the head making it useful from the age of 3-4. There are several manufacturers, we work with Khora pointing out our needs.

5. The manufacturer of our VR advises not to use it younger than 12 years old. This because of the development of the brain. However, the company that facilitates VR with us indicates that the minimum age is 6 years. What is your advice? And what is your experience?

Interesting point, we should consider the impact on a immature brain. From what I read it is depending on the degree of immersiveness. The VR tech people discuss setting up international guidelines but no good studies seems to be available concerning any particular age-“limit”.

6. Are there certain groups of children you would not recommend using VR technology for?

Children who will not participate, with recent head injury, with epilepsy, severe neurocognitive impaired, and whenever You see a potential problem. Nausea seems not to be a problem with professionally designed games.

7. I would be interested in an overview of suitable apps or games for VR in pediatrics.

Use a professionally designed game, not random games downloaded from the internet. We work with Khora (Khora.com) but I guess there are several companies out there. It is important to have a game designed for the scenario: nothing happening behind the child (turning around during iv insertion for example), designed so that the child is not getting frightened or seasick, etc.



8. Do any of the children experience nausea?

No. See our study in HOSPITAL PEDIATRICS Volume 9, Issue 7, July 2019.

9. Do you think that we can also enhance pain with Virtual Reality?

No. But VR distraction does not work for all children, it is considered one of several ways of distraction.

10. One of the mothers asked me: why don't they have that for the adults?

VR is being used for adults in numerous settings (phobia, rehabilitation, ..) and could be used for patients with needle phobia.

11. What's your experience about the fear of wearing such big glasses and than see nothing around you?

Before starting using VR we anticipated a problem, which though happens in only a few children. When you introduce VR you will immediately find out if it is the case.

12. From which age on do you recommend VR for distraction?

From the age of 4, applicable best from 6-7 years of age. Variation due to former experience with VR, cognitive level, etc.

13. How expensive is the development of a child friendly program for the VR for anesthesia induction?

There are a number of companies on the market. We use Khora (Khora.com). I think starting expenses are around 1300 Euro's for goggles, software and support. I'm not allowed – I think – to recommend one from another though. Using VR for anesthesia induction is good choice for some children (not all of course) and it focused on the important issue of calm, child-friendly induction using evidence-based distraction measures.

14. We experience that children under 4 year became anxious because they cannot see what's happening around them when wearing the VR. What is your experience with this?

Compliance is less predictable in younger age groups, sometimes it simply doesn't work. Good advice: Have an assistant concentrating on distraction and another person for the procedure, make plans in advance with the family, take a time-out if it doesn't work finding another path.

15. Do you have experience with the VR and children with autism?

No, not really. I doubt it will work unless you agree in advance on a solid plan with the child/family.

16. Do you also have medical hypnosis programs on your VR glasses? And if so, for which age can you use this?

We don't use hypnosis.

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17. Don't you find it difficult that you do not see, what the child sees? Sometimes, fault in system, questions, scary image,... and you do not know.

Get familiar with the game yourself. And purchase a system which is easy to operate, stable, starting right away, etc.

Questions for All

1. In Europe we have parents with their children at all times - which is not the case in the US. I think if you choose to work with pediatric medicine you must learn the skills of Child Life Specialists as a pediatric nurse, doctor, etc. What is your opinion on this?

Søren Walther-Larsen: We don't have child life specialist in Denmark. I agree that working with children you must learn basic skills like communicative skills with an appropriate language for what no "specialist" should be needed. Personally my "guru" is Krauss (Managing the Frightened Child. Krauss BA, Krauss BS. Ann Emerg Med. 2019 Jul;74(1):30-35)! Skills to be practices whenever working with children.