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“An intensive and interesting time”: reflections from the Sheba Medical Centre Hydrotherapy Service in the time of COVID-19

This interview took place via videoconference on May 23 2020 with Caroline Barmatz, Director of Hydrotherapy at the Rehabilitation Hospital, Sheba Medical Center in Israel. The interview was conducted by Sophie Heywood, Australian Physiotherapy Association Aquatic Group representative to IOAPT.

They were joined during the interview by Prof Jacob Lavie, Director of the Heart Transplantation Unit at Sheba who gave the patient perspective on aquatic physiotherapy at this time.

The interview was edited for clarity.

The purpose of the interview was to record the experience of a hydrotherapy service in March, April and May in 2020 during the Covid-19 pandemic. The information contained in this interview is not designed to comprehensively address risk management as this will be specific to the country, facility and organisational guidance.



Caroline Barmatz

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Sophie: Caroline, you're an aquatic physiotherapist, senior lecturer, pool designer and also the Director of Hydrotherapy at the Sheba Medical Center in Israel. Your center is well known, recently for starting with Virtual Reality and exercise for patients in the pool, as well as a long history of innovation.

Before we get your reflections on the past couple of months, can you tell us about your pools, your staff and your patients and give us an idea what business as usual looked like for you in the past?

Caroline: Our patient capacity is 27,000 treatments per year, located in the rehabilitation hospital, our facility includes an inpatient orthopedic ward, neurological ward, specializing in spinal cord injury, a head trauma ward, specializing in stroke and neuro-oncology, eating disorders and an out-patient Multiple Sclerosis Center. Pediatric and Geriatric rehabilitation wards are located in other buildings on the Sheba campus. We provide other specialized services including the military and war veterans. On the hospital campus we have five nursery schools for autistic children or those with cerebral palsy.

Sophie: Can you tell me how many pools you've got and what kind of depth and sort of size they are?

Caroline: We have two hydrotherapy pools, the large pool is 18 m length by 9 m width. It's a graded pool the shallow end being 90 cm and the deep end 1.70m. The second pool is smaller

8 m by 5 m, it goes down in steps 60 cm, 85 cm, 1.10m, 1.35m, 1.60m. At the level of 1.35m we have parallel bars, aqua-bikes and virtual reality. Our facility is to be renovated in the near future with the addition of a third pool, 2 underwater treadmills, water jets and virtual reality.

Sophie: That sounds amazing. Can you give me a little bit of background of what kind of system you use for water treatment? Is the pool chlorinated?

Caroline: Yes, Chlorine.

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Sophie: I'm interested in your reflection on the start of the pandemic when presumably the hospital was talking about how to minimize risk across all services. Can you just reflect a little bit on that time and what you thought about the hydrotherapy service and what your staff were talking about and what happened at that very early stage?

Caroline: Reflecting back around the 12th of March we were aware that something was happening out there, we didn't quite know what or how to react, I received an email from the hospital management including a list of about 14 things that had to be done immediately, it included a non-specific list of what was going to remain open and what would be closing.

Sophie: And where was the hydrotherapy service on that list of things that were going to stay open or were going to close?

Caroline: They mentioned outpatient clinics closing, without going into details. We were told to work in clusters, students and volunteers were to be notified that they could not continue their practicum. I was ordered to cut down my staff to 30%, 70% to make the choice of going on non-paid leave, paid vacation or continue working elsewhere in the hospital, according to hospital needs.

One of the first things to be done in the rehabilitation hospital was to transfer patients suspected to have covid-19 to another building. Inpatients were restricted from leaving the hospital, visits from family and friends were prohibited, with the exception of one family member who could remain on the hospital campus as the main caretaker.

My immediate reaction was that we have an important role to play, a duty to do in order to address patient's needs, and knowing the calming effect of water possibly assist in reducing staff and caretakers stress levels, the pool was to remain open. Feeling confident that there was no covid-19 in our rehabilitation center, I found no logical reason to close the pool. The pool is usually open five days a week, under the circumstances I was prepared to open around the clock as needed.

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I then had to deal with the national regulations issued by the Ministry of Health, who published regulations regarding the closure of swimming pools and leisure centers. Hospital hydrotherapy pools requesting to remain open were asked to send a letter from the medical director.

Sophie: So they were offering you an exception, but they're asking the hierarchy of the hospital to sign it.

Caroline: Correct, I had no doubts that this would be given, but what I then had to do was to approach the hierarchy of the hospital and get their written support.

Sophie: I guess this speaks to the confidence that the hospital has in the service, and how they understand the service fits into all the different rehabilitation units.

Caroline: Yes, from there we began our covid-19 journey, I joined the zoom meetings, initiated by hospital hierarchy and management, received daily debriefings and updates of national and international events, ongoing emails were sent from our Infection Control department, to be adapted, making them relevant to the hydrotherapy department and then shared with staff and patients.

The number of people allowed in the pool and poolside area was limited, therapists had to keep to national regulations of social distancing. Treatments were provided with physiotherapists instructing poolside, “SeeMe Virtual Reality” was an excellent tool to use for patients safe to perform exercises without hands on assistance in the pool.

We adapted our handling according to changes in national and hospital guidelines, issued as necessary from Infection Control and hospital management. The situation became more challenging when every person on campus was required to wear facemasks.

We had guidelines related to patient referral for hydrotherapy including screening and infection control.

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Sophie: I can imagine that there would have been confusion about the land-based physio guidelines and then thinking, do you adapt them to the pool or do you have to think a bit more about what will work for you? It must have been a little bit of a confusing time.

Caroline: Definitely. We started each morning with an update for the staff working that day.

In order to try and keep social distancing I used lane dividers to separate the pool area by water depth. One of the initial difficulties was to keep our “hands off”, as physiotherapists handling is one of our specialties, in water handling is important for feedback on the progress of our patients. In the early days I found myself standing poolside, commanding staff to keep social distance as much as possible, to find new ways to use equipment, to use the poolside for support. I took many photographs and videos to later reflect with the staff on their treatments and used this information to facilitate change. I had taken on the responsibility to make sure no-one would be contaminated with covid-19 in my department, as a result of our lack of precaution or anything that could have been avoided.

Active exercises can be performed standing, in this position as shown in the photo the therapist and patient can change the width of support, challenging balance by moving from stance to stride, turning the head, looking in different directions, small changes in upper extremity movements can promote trunk control, unilateral verses bilateral movement, looking for quality rather than quantity of movement.

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Float dumbbells for support and to adhere to physical distancing requirements

Sophie: So am I right in thinking that at this point in time you were effectively only having patients in the pool that didn't need any hands on, that there was a way that you could adapt their treatment to still be safe and effective, but without any hands on?

Caroline: I was a bit concerned to begin with and decided to start slowly and carefully without making mistakes. Patients were referred to the pool after a land assessment done by their department physiotherapists, many of them having been treated in the pool prior to covid-19.

Sophie: So it was about balancing the safety of the patient with the physical distancing and trying to find a new way to still have some beneficial therapeutic activities in this circumstance?

Caroline: Exactly, we calculated the national distancing requirements and the number of people, together with adaptation of recognized hydrotherapy techniques and handling.

Sophie: Was it mainly patients who were independent who were using the virtual reality that were safe by themselves in the pool?

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Caroline: To begin with, yes.

Sophie: Did the staff get stressed or was there generally that sense that they were happy to be contributing to the rehab of their patients?

Caroline: Staff members nearing 60yrs, had families were extremely anxious asking “how come you're going to work and why don't you just stay home?” We increased hygiene control and cleaning, removing all equipment and toys that were not needed. Our infection control gave us the OK as our equipment was used in chlorinated pool water.

Sophie: Your infection control was happy that your levels of chlorination, were going to deal with whatever risk there was?

Caroline: I wanted to be more cautious.

Sophie: What were you wiping it down with?

Caroline: We complied with land physiotherapy recommendations which includes Antigone wipes and Chlorine D.

Sophie: Was there any extra testing of the pool or changes to your usual water quality and treatment routines?

Caroline: No, because even before the epidemic, high water quality in the pool was a priority.

Sophie: It's good to know that your standard policy and procedures stood up under scrutiny and that you knew exactly what the levels of chlorine were in your pool and that you felt comfortable with that and that you were clear about what was going on.

Caroline: Everything is documented manually and computerized, backed up by central monitoring from the hospital logistics department, if they are aware of anything wrong with the pool, we are notified immediately. So yes, we aim to maintain high standards.

Sophie: And how often does the pool water get tested manually?

Caroline: Every three hours.

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Sophie: So you prioritized your inpatients as the patient cohort that had the greatest need related to their rehab?

Caroline: Yes, the rationale was to treat patients in the rehabilitation hospital, in-patients and day-care patients. Only one ambulatory patient was treated after receiving special written permission.

Sophie: Can you reflect on some of the patients treated and why the hydrotherapy service was essential to them?

Caroline: We had a patient, a 42 year old, male construction worker with crush injury of right lower limb, proximal fracture of right tibia and fibula, external fixation, ORIF with internal fixation, popliteal by-pass, repair of vertebral fracture L2, fusion L1-2-3. He began hydrotherapy 23/03/2020. On land he was non-weight bearing, ambulating with the use of a wheelchair, communication was challenging being Chinese he did not speak or understand Hebrew or English, we made ourselves understood using gestures, he had no previous swimming skills. Before he entered the pool via hoist with assistance, we had to consider what personal protective equipment (PPE) would be necessary for poolside staff.

Sophie: That type of patient with orthopedic restrictions related to their weight bearing is a perfect person who benefits from being in the pool so they can mobilize and progress with their weight bearing. It's really great opportunity that that person still got to use the pool.

Caroline: Deciding what Personal Protective Equipment (PPE) to use in the hydrotherapy department was another challenge we were confronted with. Surgical masks were supplied 1 per member of staff per shift. The elastic band tears easily and it is difficult to keep them dry when working in water, staff showed some anxiety, in time we were provided with plastic visors. We discussed the PPE issue in our daily morning staff meetings, this reduced anxiety to a certain extent.

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Sophie: It sounds like your morning meeting worked well for staff to discuss what was happening and if anyone had any concerns.

Caroline: Family members showed concern for their loved ones, “essential workers” in a hospital setting. The situation was looked upon from a different perspective; inside the hospital we were aware of the arrangements that had been taken to distance covid-19 patients from non-covid-19 patients in rehabilitation. We all have many roles to play in our lives, being a therapist is just one role, my staff members are also parents, brothers and sisters, some have elderly parents and grandchildren. Israel was on lockdown, most people stayed home. There were lots of things going on, for most of us it was finding the balance between work and home. We spoke about things, issues that happened the previous day, checking on peoples’ feelings and coping strategies. We were learning and changing things all the way along

Sophie: That sounds like a really supportive way to adapt to changing circumstances.

Caroline: Managerial staff too had the support of evening debriefing, information was shared.

Sophie: Do you have any other reflections on any other patients?

Caroline: There was a young male with high level quadriplegia injured in a motor vehicle accident, we did not insist on him wearing a surgical mask during therapy sessions because of breathing difficulties associated with his condition. The smile on his face, his therapists’ face and his parents’ faces who sat poolside and watched him swim prone in the water a full width of the pool, will always remind me that I made the correct decision to keep the pool open.

Sophie: At that point, Caroline, you didn't have any concern about patients putting their heads under the water? Because you were so confident with your pool chemistry?

Caroline: I think so, yes.

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Sophie: That's the difficulty, isn't it? You were still operating and having to adapt from day to day on the advice you were given rather than really being able to stop and write down guidelines. Were there other things you did?

Caroline: I kept a personal journal, writing things down for myself to reflect on, sometimes only minutes later and sometimes the next day or week. Critical information was flowing through the hospital, at the speed of light. What was good for the time being could be changed instantly, we learnt to be flexible. I always say that about water, it changes its state depending on the temperature, it changes shape depending on the vessel it is placed in, it can be calm and slow, then suddenly turbulent and dangerous. Signs and placards were placed appropriately, floor stickers were used to maintain 2m social distancing. Ventilation was improved by keeping doors and windows open. We did some education sessions in and out of water, recording them to think about other ways to support patients from a distance and think of new exercise ideas, innovation.

Sophie: As you say, you sort of using your intuition and you just had to kind of adapt to whatever new information came to hand.

In summary, it sounds like you did a lot of things to manage risk. It sounds to me like changing the line ropes helped you to section off the pool. You tried to keep your hands off from patients by using the flotation dumbbells or pool noodles. And if the patient needed some hands on you try to change the position of the therapist's head in relation to where the patient was. It sounds like you wanted to start really carefully with your inpatients that you knew already so you could adapt to the new circumstances. You put away lots of equipment so it didn't become an additional kind of infection control risk and it sounds like everyone contributed, all the staff contributed to cleaning surfaces around the pool more regularly than usual.

It also sounds like communication was really critical with your morning debrief to your staff and also getting information from the hospital on a daily basis was important.

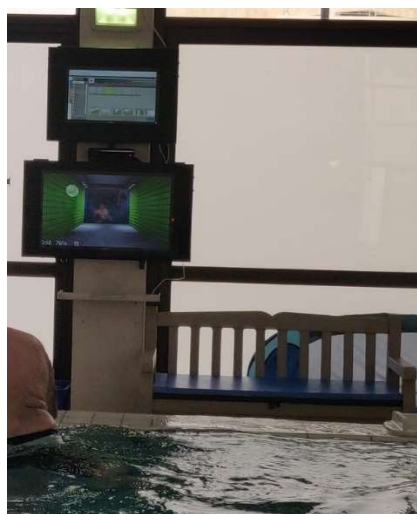
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Obviously your good relationships with the medical staff from the hospital hierarchy supported you to stay open at the start, but then also gave you confidence to make sure that you know that you're included in really critical kind of information flow through the hospital, which has great.

You were confident with your pool chemistry, you were testing it regularly. You've got a good support structures from staffing related to maintenance and pool chemistry, which obviously helped.

You had lower numbers of staff and patients in and around the pool due to social distancing. You've got signage and floor stickers related to physical distancing. You kept your doors open for more ventilation, you did some training sessions and challenged your staff to be creative and adaptable related to how they can support patients from a further distance but still be safe. You chose to use surgical masks and face shields in the pool as an additional safety measure for staff and patients. It sounded like infection control was happy with what you're already doing.

It sounds like the Virtual Reality was a bonus for you to be able to use, as an extra way of not having to be close to patients.



Virtual Reality system at Sheba Hydrotherapy pool

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It sounds like you had a very supportive and sort of grateful attitude to keep the team together, with everyone feeling positive and listened to about their concerns and recognizing that staff also had stress from family and other circumstances in their life. And unfortunately for you, you also had really significant stress connected to the death of someone you loved very dearly in your family. Recognizing those extra stresses I think sounds like it was really beneficial for your whole team to stay connected through the whole process.

It sounds like it's probably difficult for you to remember exactly all the things you changed because you had to adapt from maybe day to day or week to week in terms of the information you were getting.

Caroline: We made the necessary alterations and adapted.

Sophie: And so I can sort of see how it must be a little bit of a blur to some degree, as you've mentioned before, you had to get into that top gear.

And as far as you're aware, there were no adverse infection control issues in the time that you remained open?

Caroline: Nothing to my knowledge at all.

Sophie: That's good.

I think the different countries and aquatic physiotherapy services have all got different kind of stages of advice at the moment and different pressures.

Caroline: Well, tell me something in Australia where any of the pools kept open?

Sophie: Yes, there were some hydrotherapy services, some within hospitals that I know of that stayed open and probably like you, they adapted, and as far as I'm aware they haven't had any issues.

So thanks Caroline, it's been fascinating to hear more about the journey.

Caroline: It was and still is a very challenging time, we are lucky to have the global aquatic groups, everybody's sharing things, there are super people doing superb work.

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Sophie: Yes, and it's really great that you're so open to sharing your experience too. And you're right, it is the best way for us all to learn from each other. Thanks so much for your time.

(Sophie and Caroline were joined by Prof Jacob Lavie)

Sophie: Hi Prof Lavie. Thanks very much for your time. Hello from Melbourne in Australia.

Prof Lavie: Hi Sophie.

Sophie: It's great to have you connected to this interview with Caroline. Perhaps she mentioned to you that there's a lot of international interest in what's happening in the hydrotherapy service at Sheba and you've obviously got a unique perspective on how you utilized the service.

Prof Lavie: Okay, for me having discovered hydrotherapy for the first time, it was really a miracle because I was doing regular physiotherapy for quite a while and adding the “day on day off” hydrotherapy was a real relief for my painful knee. We spent how long Caroline? More than month and a half, right. Together three times a week. I really enjoyed every minute of it. I used to come either directly from the operating theatre after spending long hours standing on my hurting knee or a day after and it was nothing short than a miracle.

Sophie: It's really interesting to hear your perspective. Was there something about what was happening for your job role at the hospital that meant that you were on your feet more? Was the aggravation of your knee pain connected to a change in mechanical load or stress or was it just random timing for it to be flared up during the covid epidemic?

Prof Lavie: I think it was a random timing. I think the toll of almost 30 years standing in the operating theatre on my knee and finally the knee gave in, that it was just a coincidence that it happened during the covid epidemic.

Sophie: I imagine during the epidemic it wasn't a time where you could just take a step back and take it easy at the hospital. Presumably you had a lot of really urgent things that

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were happening at that time, connected to either the cardiac unit or the heart transplant unit.

Prof Lavie: Well once the epidemic started, obviously their regular operative schedule has changed completely. So we were doing only emergency cases. Even one or two transplant cases were done.

Sophie: And can you reflect a little bit on what your insights are between what you did in the pool and what you did in land-based physio?

Prof Lavie: I could really appreciate the additive value that I got from the time I spent in the pool. I mean, the physiotherapy was good, but only once I had started working with Caroline in the pool I could really appreciate how hydrotherapy adds quite a lot and relieves pain in a much more intensive way compared to the physiotherapy. As time went by, I used to find more and more exercises I could do in the pool. So I'm looking forward to actually continuing that because unfortunately it seems that I'll need to have some knee surgery, but have already scheduled with Caroline that once I'm finished the initial recovery, I'm going to be back in the pool.

Sophie: It sounds like you had a really positive experience and which is great. I guess I'm interested in how to know from an infection control point of view, were you or any of your friends or family concerned when you started coming to the pool? Was there any discussion about a nervousness from your family about thinking should you really be going or anything like that?

Prof Lavie: Not at all, during the water exercises Caroline was wearing the translucent, you know, face cover. We both felt quite comfortable and quite safe and being a staff member we're checked routinely for our health. So I don't think there was, it was absolutely no issue.

Sophie: Thanks very much for your time and insights.

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Prof Lavie: Thank you very much, Caroline. Once again. Thanks a lot. Thank you. Take care.

Note from Caroline: as of May 23 2020, Sheba Hydrotherapy service is gradually opening up to some outpatients and even treated a patient who has recovered from covid-19 in the water recently. Further data and information from the Sheba Hydrotherapy Service will be written up and shared in the future.