

## **Pathways to Sleep: I-E. From Health to Sleep**

### **Time-Zone Challenges**

**William Bergquist Ph.D.**

The pathways considered in this essay don't apply to all of us – but do apply to an increasingly large number of people who are “globe trotters” (at least those who travel several 1,000 miles or more). These are the women and men who fly, drive or take a train across one or more time zones. These are those who are addressing the sleep-related challenge of *Jet Lag*. While this challenge is usually greater for those who are moving quickly (via airplane) across several time zones (hence the term “jet lag”) than for those moving slower across several time zones via automobile or train, there is still the need for our body to adjust to a time zone change. Even the one-hour shift from standard to daylight savings time can produce sleep-related problems.

Why does a sleep-related challenge often occur when we are “dancing with time.” The main reason for the challenge relates directly to a neuro-biological dynamic we discussed in our first set of essays. This dynamic relates to our body clock and the circadian cycle which most of our bodies follow diligently – and with a stubborn insistence. Our body is absolutely determined to stay with its usual routine of falling asleep at a specific time of night (or day) – irrespective of the time zone in which we currently reside. When we were dwelling on the African savannah, there were no time zone changes and certainly nothing like Jet Lag. Our bodies were responding to the embedded cycle with a little bit of help (actually a whole lot of help) from that celestial object called the Sun. We woke up when the Sun rose in the East and went to sleep when the Sun set in the West. It was all quite simple and very healthy.

What happens when we try to fall asleep in a strange new land when the Sun is still shining (because the Sun had set back on our home base)? What do we do when the Sun has set in our new “home” and everyone else is settling in for a night of sleep—but it is still late afternoon in the city from which we just flew? Do we take a pill in order to fall asleep? But will we get addicted to this pill if we have to do a lot of traveling? It is much colder in this new location or much warmer—did I bring the right clothing and doesn't this change in temperature increase my chances of catching a cold? And what about this strange

bed in which we are trying to sleep? Is there such a thing as Bed Lag? Even if the bed is touted as super-comfortable, it is not our bed--and this is not my favorite pillow (or did I bring my special pillow with me?). Furthermore, my routine is shot. Where is the news program or comedy show or talk show I always watch before falling asleep? Where is the hot tub, exercise bike or cocoa I always engage before going to bed? Most importantly, where is my sleep companion with whom I always share a few words, a kiss and some snuggling, before falling asleep?

Put simply, it all begins with the disrupted circadian rhythm and that powerful force of sunrise and sunset, but soon evolves into a much more complex and often rather elusive set of factors that make it hard to sleep when traveling – whether for business or pleasure. What then are the pathways that can be of greatest assistance in helping us achieve a high quality of sleep even when “on the road”? I would suggest that there are three major pathways. One of these I label *gradualism*, the second being the *enroute* pathway and the third being a pathway I call *accommodation*. I will briefly describe each one.

### **Gradualism Pathway**

We know from research on Jet Lag that it usually takes one day to adjust to each time zone change. Thus, if we are traveling across two time zones then it would take us two days to adjust to the new location. With regard to sleep, this means that we are likely to find it a bit difficult to fall asleep and stay asleep for a couple of days, given the two zone move. This, of course, is assuming that the two zone shift has occurred over a short period of time (through jet travel). If we are driving through the two zones, then the adjustment is much easier. Furthermore, it is assuming that one’s travel is East to West of the other way around. There is a whole different set of factors operating when the travel is North to South (within the same time zone). The change in this case often concerns not the circadian rhythm, but rather shifts in temperature (as well as the other changes already mentioned).

If there will be a circadian challenge associated with your challenge, then the experts rightfully suggest that you begin to adjust your sleep habits to the time zone in which you will eventually land. Let’s say that you are planning to end up in a time zone that is three hours ahead of you (it is 10pm in this location but only 7pm where you are now residing). This would mean that you go to sleep one hour

earlier each night for three days. Instead of going to sleep at 9pm on the first night you snuggle into bed at 8pm and then 7pm on the second night and even 6pm on the third night.

In making this adjustment, you might consider some of the other pathways I am featuring in this series: perhaps a bit more exercise than usual or a ½ hour in the hot tub. It might be particularly important for you to eat at an earlier hour and to move up other habitual behaviors by an hour each day. Obviously, the opposite would be the case if you are traveling to a time zone location that is three hours earlier (it is 7pm in this location but 10pm where you are now residing). It is a matter of adjusting not just the time you are going to bed, but also the other pathways that help prepare you for sleep and help you remain asleep. Sadly, it is often very tempting to take a sleeping pill when preparing for travel – but this can be a very slippery slope (as I have discussed)—especially if you travel quite a bit.

This policy of gradualism makes a great deal of sense. The experts should be followed: adjust by one hour for each time zone you expect to cross. Most importantly, the gradualism policy should be adopted at both end of the travel plan. When you return home, there should be a gradual transition from the old time zone to the new one (your home location). If you are returning from a location that is 5 hours ahead of your home location, then you might want to eat a bit earlier and fall asleep a bit earlier in the evening – arriving at the “regular” time of meals and sleep over four to five days. Or plan for the opposite transition if coming from a time zone that is 5 hours behind. At the very least, recognize that the adjustment is almost as great in returning home as in leaving home (though there is usually less trauma in returning to a familiar bed and long-established pre-sleep habits).

So, no problem. All is well and good with adopting a gradualism plan. Except . . . What if you are traveling halfway around the world – as I often do. There is no way in which you can adopt a gradualism plan if the time zone to which you are traveling is 12 hours ahead (or behind – it is all the same). How do you start going to sleep at noon and wake up at midnight? And can you really begin this radical adjustment twelve days before leaving on your globe-spanning trip. How will your family accommodate this radical (rather long-term) shift? Can you really perform your job adequately while making this transition? It is fine to adopt a rule-of-thumb heuristic to make a shift of one hour for each time zone—but it becomes quite a challenge when this shift is of a greater magnitude than 3 or 4 hours. This is where the other two pathways come into focus. In many cases, we are indebted to those women and men who are in the business of traveling across many time zones many times during a month or year. These are the pilots and flight attendants for whom Jet Lag is an occupational hazard.

## Enroute Pathway

The second pathway concerns that usually brief period of time when you are traveling to your destination. While this doesn't account for much of the time when away from home, it is often considered the most important time to either get some sleep or determine that sleep is either not possible or recommended. Let's start with the last of these statements. Many experts suggest that we remain awake if traveling a long distance, so that we are ready for sleep in the new time zone, given that it is much earlier or much later than is the case with our home time zone. So, we stay awake in order to later fall asleep. This is a variant on the Gradualism strategy.

Or it might be the case that we simply know that it is very difficult for us to fall asleep when traveling on an airplane. We are sitting there wide awake or trying without success to fall asleep even though we are tired. We look around us and see that everyone else is sound asleep (or at least appears to be sleeping). We are annoyed with our own inability to sleep – which makes us even more aroused and unable to sleep. We give up trying to sleep and instead read, listen to music or watch a movie on the screen on the back of the seat in front of us (or on our laptop). It might be only a six to eight hour flight across one or more continents – but it seems like an eternity. We marvel at the speed the plane is recording and recognize that we are flying across many miles of land or sea – but still are impatient for the flight to end.

What is the alternative: getting some sleep! We can pay a lot of money for an upgrade to business class, where the seats miraculously fold down flat. We peer through the curtain separating economic from business and first class and see everyone appearing to be tucked in with pillow and blanket. Are they asleep? Why is this class-based society operating on my flight! Curse the upper class! Let the revolution begin! This anger, of course, only makes us less ready for our own sleep and our economy class seat feels even less comfortable and less amenable to supporting our sleep. Do I pay that extra \$1,000 for a night of sleep next time? Probably not. A lot to pay for one semi-comfortable night of sleep. And I will hold off the revolution for another day or two . . .

Instead, I prepare for semi-adequate, often interrupted sleep in my economy section seat. This often means strategizing and preparing ahead of time. I place a sleeping mask and earplugs in my carry-on bag so that I can eliminate (or at least reduce) light and sound. I might even bring along a neck pillow or at least keep the blanket provided by the airline – so that I can crunch it up as a pillow to lean against. The

key is often choosing the right seat ahead of time. For some of us, the priority is a window seat (so that I can lean against the window). For others the priority is an aisle seat for easy access to the rest room (hoping beyond all hope that our seat mate doesn't have to frequently nudge us to get by for their own trip to the rest room). Then there is the matter of loose clothing, a comfortable scarf or cap, and perhaps some outer socks (to wear in place of our shoes). Support hose is recommended if the circulation of blood is a problem (often exacerbated by long durations of sitting without much movement—the reason why frequent standing and stretching is recommended). There are even small massage machines that can be brought on an airplane (though I have yet to see one in operation).

Then there is the matter of sleep aides. I recently counted more than 80 different sleep aides on Amazon. Some are homeopathic, others are not. Some include alcohol, others do not. Of course, there is the standard and frequently recommended melatonin. Do we take a sleeping pill? What kind? I will have much more to say about this when addressing the Fourth Pathway to Sleep (focusing on sleep aides). What about a glass of wine or something stronger? Is this a good idea? It is important to remember that airplanes operate with reduced air pressure in the cabins. We are living in a temporary world of high altitude. There is less oxygen and the air is much drier than most of us live with when not flying high. This means that alcohol and most medications have a much greater impact than when we are not floating at 35,000 feet. This also means that it is easy to get dehydrated. Alcoholic beverages lead to dehydration. All of this means that we should consume many liquids while flying – but in most instances this should be water rather than booze.

Other nonmedical and nonalcoholic technologies might be considered. There are earphones that produce sleep-enhancing sounds (or at least block out cabin sounds) and eye shades that produce sleep-enhancing patterns of light. Those in the business of long-distant travel to far-away lands often praise these new technologies and never travel without them. Much less expensive are the musical soundtracks and nonmusical relaxation recordings available on the playlist of most high-capacity airplanes. There is also the paradoxical use of technology that I will feature in a later essay: this paradox concerns the watching of a boring movie or listening to boring music or a boring recorded lecture. All of these inputs tend to put us to sleep. We are told not to watch TV or a movie when trying to fall asleep; yet, we all know that sometime this is the best way to fall asleep whether we are tucked into our bed at home or flying high in the sky.

One final note that flight attendants often suggest. If you are going to try falling asleep, do so at the start of the flight when the cabin's air pressure is slowly declining. This is a time when we are likely to

become most drowsy. It is not just because we have just settled in after racing to catch the flight, but also because our body is adjusting to the change in altitude. So, take advantage of this environmental transition. Perhaps it is also advisable to adopt a different frame of reference: rather than regretting the lack of sleep on the flight, you can look forward to catching up on the latest movies or dipping into that cherished novel you have always intended to read – or perhaps just enjoying some music or looking out the window at the passing landscape or cloud formations.

### **Accommodation Pathway**

We now arrived at the third pathway – the one that is critical if the first two don't do the job. You are traveling through many time zones, so gradualism doesn't work. You aren't able to sleep on the plane or you recognize that this is only one night and you will have many more at your destination location. At this point, there must be some accommodation. How does this take place? I would suggest there are three options—and one of which or all of which you might engage.

First, there is the option of a *buffer zone*. You fly in a day or two early so that you can get some sleep and begin to adjust to the new time zone. Similarly, when you return home you take several off to readjust to the time zone and allow your body to do some recovery and healing (especially after inhaling the often germ-ridden atmosphere of the airplane cabin. The start-of trip buffer zone might not be possible, given finances and specific time demands. The “cost” of no buffer zone, however, should enter the equation in planning for the trip. The end-of-trip buffer zone is often even more difficult to negotiate given the time demands associated with return-to-work and the understandable expectations of your family regarding make-up time with children and spouse. This second buffer often requires some “educating” of those waiting for your return regarding your own health and wellbeing as well as reasonable work-load expectations on the part of your boss and workmates.

A second option is ultimately in the hands of your “hosts” in the new location. They need to be sensitive to the *needs associated with your time zone adjustment* – and might not be fully aware of the need for this adjustment if they are not themselves frequently travelers to distant locations. What might these adjustments look like. They might include offering you some time off during the afternoon for a nap or at least a half hour of alone time. Your hosts might schedule you for a late (or very early) start up time for meetings (depending on the direction of your time zone adjustment) and might offer a shortened day or two for you at the start of your stay in the new location. A gentle approach to meals might often

be considered: not all meals need acquaint you with the unique cuisine of your host's country. A bit of "down home cooking" need not be considered an affront to your host's culture – but rather recognition of your bio-gastral adjustment to the new cuisine. Sleeping is usually not enhanced by an upset stomach or your bodily focus on digesting the new food. A ceremonial dinner (perhaps even a banquet) is a wonderful thing – but perhaps it can be held on the second or third night.

The third option concerns your own *on-gong health maintenance*. You might request staying at a hotel with exercise facilities or you can take a walk (or jog) in the morning. You might also take frequent breaks during the day to step outside for a breath of fresh air. Most importantly, you need to get some lumens!! This means finding a few minutes in the Sun so that your body can begin to more fully adjust to the time zone change. Remember that your existing circadian clock is readjusted primarily by your body's exposure to direct sunlight. It is the Sun and not your alarm clock that tells your body to do the time zone adjustment. Without Sun, you are likely to be fighting a losing battle in making the adjustment.

There is a fourth option – the one that is always tempting us – especially when we are traveling. This is the option of medication. We can take an Ambien or at least some milder (and less addictive) sleep-inducing medication. But is this a good idea? The problem is not just the risk of addiction (which is the long-term problem), but also the risk of your body not being able to adjust "naturally" to the time zone change. The medication induces a "false" change in your circadian cycle and your body doesn't do "the hard work" of making its own adjustment. This means that when you are faced with the challenge of sleep during the second evening, the temptation will be to take another pill. The alternative is a night of fitful sleep or no sleep at all. Same for the third night and any additional night. It gets even more problematic—your body will still want the medication when you return home and try adjusting back to your home time zone. You are on your way to an addictive cycle, needing an increasingly large dose of this medication to fall asleep. Welcome to the world of sleep medication addiction. I know it well.

If you are going to use a sleep-inducing medication, then make sure you are engaging one or more of the other three options. It is particularly important that you get direct exposure to Sun and a reasonable work schedule during your first day in the new location, so that you don't need to take the medication after day one. The buffer day at the start of your relocation is especially valuable if you intend to restrict your use of the medication to just one evening. Cutting yourself "a little slack" at the start of your trip can do wonders in terms of your need for an honest rather than artificially induced adjustment in your circadian cycle. A similar plan should be in place when you return home – so that addiction is avoided.

## **Conclusions**

It is not unusual in our dreams that we are flying about – with or without the aid of an airplane. When it comes to flight in the real world, we must rely on the airplane rather than our magical capacity to lift off the ground and soar about. In this real world, there are major challenges to our sleep when we are flying about. I have suggested several pathways that can be of some benefit in meeting these challenges; however, the most important message for me to deliver is that we need to recognize the toll taken when we move quickly across several time zones. We need to be kind to our own body and mind when we take on these sleep-related challenges. Otherwise, we are likely to be “grounded” by illness or at least the “foggy” aftermath of sleepless nights and Jet/Bed Lag.