Aging Pathobiology and Therapeutics 2022; 4(3): 93-97 ***93***
DOI: 10.31491/APT.2022.09.095

On the growth of young neurologists—an interview with Prof. Louis R. Caplan

Qi Qin[a, *]

[a] *Innovation Center for Neurological Disorders, Department of Neurology, Xuanwu Hospital, Capital Medical University, National Center for Neurological Disorders, National Clinical Research Center for Geriatric Diseases, Beijing, China.*

Abstract

The article is an interview with Prof. Louis R. Caplan of the Department of Neurology, Beth Israel Deaconess Medical Center at the Harvard Medical School, conducted by Qi Qin from the National Clinical Research Center for Geriatric Diseases at the Capital Medical University, on behalf of *Aging Pathobiology and Therapeutics.*

Louis R. Caplan, MD

Louis R. Caplan (born on December 31, 1936) is an American physician and senior member of the Division of Cerebrovascular Disease at Beth Israel Deaconess Medical Center, Boston. He is a professor of Neurology at Harvard Medical School, Boston, and the founder of the Harvard Stroke Registry at Beth Israel Deaconess Medical Center. His top areas of expertise are stroke, transient ischemic attack TIA, apoplexy and moyamoya disease. Caplan (H-index 100) is also the author or editor of 51 books and more than 700 articles in medical journals.

* Corresponding author: Qi Qin, MD, PhD
Mailing address: Innovation Center for Neurological Disorders, Department of Neurology, Xuanwu Hospital, Capital Medical University, National Center for Neurological Disorders, National Clinical Research Center for Geriatric Diseases, Beijing, China.
Email: qinqibao@126.com
Accepted: 28 August 2022 / Published: 30 September 2022

Qi Qin: As we all know, you are a great clinical neurologist, could you tell us what made you choose this field and what is the most fascinating thing that you think about neurology?

Louis Caplan: I became interested in neurology in medical school. There were two very well-known neural anatomists and neural researchers from the Netherlands, Wally Nauta and Andre Kuipers, coming to Washington to do some research at the National Institute of Health, who also came to our medical school and gave lectures on neural anatomy. The lectures were wonderful, which were made very interesting and alive, meanwhile each of the different nuclei and pathways was made like a story. One example that I remember vividly was a comparison of the brain stem to a local community rather than the venom. Some local people do business with local shops, and some roads go to big cities, while of course, they don't want to go to the center, but go sort of on the side, *e.g.*, some go into the city sensation, while others go out of the city motor, and then if being restless, they need some exercise, so there are some pathways to the cerebellum, which is where sporting goes, and that's the way they made it very interesting. Since I started treating neurologic patients, I've found them to be the most interesting. They were complicated, often sick, often devastated, and were disabled, therefore, it was vital to help them. So, my interest began very early in medical school, and when I was an intern and resident medicine, we had a very good person who gave rounds with us, and the patients were fascinating.

Qi Qin: People often say that, "it is easy to go into professional but hard to become a master", so do you have any recommendation on how to become an effective clinical neurologist?

Louis Caplan: I think the most important thing is to be a student. My mentor taught me how to study, and each

patient you see teaches you something, whether it's something about their neurological diagnosis or neurological findings and whether they're weak on one side or toxic, meanwhile, something about them as people, how they deal with their illnesses and how their home, families as well as work interact with their illnesses, together with how they deal and manage them, so you can learn something from every patient. Once you start doing that, I believe that you would begin to collect interesting things that you don't understand, and when you have enough cases, either your research or some findings will reveal what they are. You know what the patients had previously, therefore, by being a student and collector meanwhile being interested in many different things, you may accumulate enough materials to research and write about them. So, you're gaining all the time, which is not casual, on the contrary, it's fairly serious and also doing things in a way that isn't a checklist but a modus operandi of bathing, so with each patient being very systematic about how you do an exam or a questioning as well as how you write up the cases and then collect them, I think it a very important thing about getting information.

Qi Qin: Always being a student, you can find questions from clinical daily activities and incorporate them into your research to find answers to clinical questions. I think it is an excellent method, and I will continue being a student.

Louis Caplan: The other thing that stimulates you is the other doctors, medical students, residents, and the academic environment, which are always asking you questions and then making ideas. So, you enrich yourself with their ideas, and they frequently ask questions whose answers you don't know, thus stimulating you to try to find them out, work out those particular questions and study systematically.

Qi Qin: When talking to each other, people always have fresh ideas, and you can share your thoughts on anything for them to offer you criticism, which is great.

In addition, I read a book you wrote called *Caplan's Stroke: A Clinical Approach,* where you have produced so many groundbreaking discoveries in this field. How could you be so effective and start such a successful career?

Louis Caplan: One of the most important things you learn in school and college is how to communicate and get your ideas across in both speaking and writing. We see many doctors who are very smart and competent scientists, but they have difficulties communicating with patients, talking to students and writing. I've always been interested in writing the book, which didn't start as *Caplan's Stroke*, but *Stroke-A Clinical Approach*, whose idea is to make it systematic so that people can be logical when thinking about stroke. Thus, to start with the very basics, anatomy, pathology, clinical diagnosis, laboratory diagnosis and treatment were the first part, and then various topics are take and put together. The other thing I tried to do in that book was to keep it relatively simple. I think that a difficulty is that if there is a student or a young person reading, it's tough for him or her to look at very complicated senses and think a lot of times when reading. We read whether on a train, a plane, or doing something else, so one of the things I did was writing short sentences that are simple and easy to read. Another thing I did was trials for clinicians, who are like something to be related to patients. It will be very hard if just dry materials are applied to patients, so what I did in person while entering your circulation stroke was to present patients who had carotid artery disease, brain embolism or various things, and then presented them in each talk about that topic rather than dryly narrating what crowded artery disease it was. I would try to attach it to a patient, so I did that with all the usual topics that people come across, such as entering your circulation diseases, posterior circulation diseases, small vessel diseases, brain embolism, brain hemorrhage and tuberculate hemorrhage as well as the way to make them sort of systematic, so it was written as sort of a course where you were the basic, and then you could apply it to patients in different areas, so, the book has gone through five additions. There is another one, but what I did with the latest edition was a little different; in the first four editions, I wrote and edited everything myself since it's difficult to be critical when doing something so many times, and it is difficult to recognize what you've not done quite properly. Some of what you've mentioned may be out of date, and some may have been left out, so, I had another person who was a specialist in that subject to read each of the chapters, give recommendations, do some editing and update for the fifth edition. I think it the best edition, which was not only my opinion, but other experts in those many disciplines also agreed. I'd like to write, so I think that it has been beneficial, but it's a different book than the primary one that I worked on for about four or five years, which is a book about posterior circulation stroke, vertebra bass or eskimi and hemorrhage, so that we had collected our information. We had established a registry for patients with vertebral or arterial diseases, and we had over 400 patients, so that the book contains information about their location, age, race, sex and history, how their diseases developed, the imaging and the outcome. To write the major book, I went to several different libraries, some in Europe and some elsewhere, to look at what everyone else had written and then fit it into what we can now say is part of it, so that the book is a much more scholarly type of analysis on a syndrome under a certain condition, whereas the clinical approaches for stroke are more sort of teaching. The other thing I did, which you may not know, was a book called *Effective Clinical Neurologist*. I know that it has been translated into Chinese and Japanese, so when one does sort of things like talking about how he or she does and think about clinical work, how to take a history, do an exam or present to someone, *etc.*, there are the three different kinds of books. Therefore, I've done two or three books for the public, trying to explain in simple terms what is stroke, together with prevention and things like that, and that's what I'd like to write.

Qi Qin: I'm inspired by your process of writing these three books. In clinical research on daily activity, I like to write

something but it's not systematic, and I just write it down but it's not in a process, so this inspired me to know how to become a professional and live our daily clinical life.

Louis Caplan: It doesn't come right away, so you have to try and work to get better at it. You start by writing several reports on patients you've seen, their symptoms or things like that, then once you've done it and gotten the hang of writing, you can do something a little bit larger, like a review or an idea you've had, which then gradually increases, but you don't start with a large book right away. It's all about practicing your writing and having others look over and edit it.

Qi Qin: Yeah, that's right! Just write down some case reports and then compare their similarities to see I can find any critical issues on which to focus.

Louis Caplan: It doesn't have to be a case report on a single patient, but could be a discovery of data collecting. One of the first papers I did was on Joses's drooping of the eyelids. We are taught that drooping of the eyelids is usually caused by third-nerve pausing, where the eyelids completely or sympathetic droop, or there is a hornor syndrome. But what happened was that I was seeing a lot of patients who had tossed droopy eyelids without having either a third nerve policy or a hornor syndrome. What I did next was collecting all the patients I encountered who had droopy eyelids and try to make sense of the varied reasons other than third-nerve palsy or hornor. So, the other type of paper you can write is one in which you take an interesting finding, begin by seeing patients and collect information about them. I can give you another idea that I had. Most of the ideas could be simple, so I became interested in the test of putting something in a patient's hands and seeing if the patient could name it. So, I took a hundred people and studied on them with four corks, which came in different sizes as you put them in the bottles. I'd place them in a patient's hand with his eyes closed and asked, "What do you see, what do you feel, how many are they?" He gave me the biggest one, then the next biggest, and then the smallest, and then I asked him what they were. I studied on the handicaps that made it difficult for people who had strokes to complete this task. So, it's a very simple thing you can do with patients at the bedside in a clinic. As you know, I'm not so much into the trials of some clinical research that you can conduct, which are a different type of study trials worthwhile interests but not being intellectual, which are not as difficult thinking, and you know that you need to work together with a lot of people. So, it's not an individual thing, there are many various things you can start with for a clinical investigation and performing, and there are numerous indications we see all the time but don't understand very well, where you could begin to collect.

Qi Qin: Can you share with us your current focus and what you most want to achieve in this field? So you've accomplished so much, what's your next focus?

Louis Caplan: I would say two things basically: I'm old, not that active, nor am I seeing so many patients in hospitals, my focus is primarily on teaching younger people, medical students and residents as well as working on stroke with three fellows to find a way to do clinical work and research, meanwhile taking very good care of patients. This is another question that people ask: how are things different now compared with what they used to be in stroke? One way is that if you cite research or a report, students and residents can obtain it in five minutes, print it out, or look it up, meanwhile looking up all the recent materials. But how did things begin, who was the original idea, how did that idea evolve to where it is now, and where does it lead in the future? So, if you're looking at a treatment like thrumbolicits, the history like how did it start, who started it, what was the evolution of the idea, what mistakes or issues did they have in the past, and how is it now, should be integrated into the understanding of the notion. I believe that you need to know where you were and where you are now before you can know where you're going, so I've been very interested in history. I wrote a biography for my mentor, Dr. Miller Fisher, who was one of the people working on early stroke, and then we just wrote a book called Stories of Stroke that will be out soon, in which I took each sort of thing and looked at them with a coauthor, who was a young Indian neurologist. Different diseases, for instance, atsburn warfarn Andy coagulants occlusion of the syllable Venus sinuses, different treatments, different people and how things sort of evolved hysterically, are what I'm trying to get some young people to do, not just putting out the recent part, but to go back into the ideas, because if they're going to make advances in the future, they won't want to repeat the same mistakes that others have already made, so they need to know how these ideas were generated and how they were evolved to predict where they will be brought up in the future. I'm highly interested in history and encouraging people to study it. People in the United States read far fewer books than those in China, Japan, India and Korea.

I'm trying to get them to read some of the works and ideas again meanwhile going over the history, which I believe is very essential for stroke. Everyone has been focused on the first few hours, how to do emergency treatment, how to give TPA and how to do interventional treatment, which a lot of people are doing, but the almost forgotten is the symptoms and signs of patients when they are being taken care of, so some of them will still have strokes no matter how well you treat them. So for recovery, what are the things we do that support it and what are the things bad for it, there are now several tools that we start to look under different conditions, and we can work to try to make the patients get better.

Stroke neurologists have not been emphasizing the above sufficiently, and there will be a limitation caused by the acute period. They're just people without any way to get to the hospital, who are going to go home hospitals instead of going to recover completely, so there will be a lot of people in both China and the United States who have a stroke, a taxic or C double, visual field defects, or cognitive problems, so in my opinion, it is critical to get people interested in the brain, how it works and how to treat each of these conditions. Thus, that's kind of my emphasis

on the residents and fellows, that is, to think about how the brain works, which was one of the reasons I became interested in neurology. As a window into how the brain works, you should know what are some of the neurological diseases, what lesions in the brain cause them, and how they work with them.

Qi Qin: Thank you. I know the three things you're going to do besides educating more clinical students and residents, the other one needs to be focused more on the history of the stroke and letting people know the history of some strokes. I think that the last one is the most important, which inspires me, that is, to focus on the disease recovery. As we all know, stroke is a main cause of disabilities among adults, and as society ages, the burden caused by stroke increases significantly, such as in China. Could you give us any idea on how to avoid, recover from or treat such a large population of patients with stroke?

Louis Caplan: I think that a person with stroke has to do study general neurology, so some of the general ideas are also about other diseases, and you have to be somewhat general when answering this question and see the difficulty, which is that you and I see the patients after they've had a stroke if we're doing a prevention or a secondary prevention. We're trying prevent them from having another stroke or Vasco problem, a heart attack or something like that, so patients mostly go to see primary care doctors or internists, and we have to start thinking about what the society can do to ensure that those general physicians are the ones who take prevention seriously.

There are things that require therapies to prevent a stroke if a patient is overweight, eats improper foods, does not exercise or take the right medication, has high blood pressure, diabetes or a blood clot. The work then, is not only one of the reasons why I wrote the books for the public, but also for public internists and general physicians to educate patients on prevention because they're the ones that see them. This is what we have to work on, and of course, we have to educate the public on some of the causes of stroke, how they can prevent it, and what simple but useful things they can do. So, I think it important to work with the general population as well as primary care physicians, internists and residents.

One of the things we did that I found very effective here and in India was something called stroke clubs, where patients were got to come together and talk, who would invite neurologists and internists meanwhile would also interchange with their friends as well as other people to spread some of their words. I think it sort of thing, and then there were some public clubs, such as a rotary club in India, which was general so the doctors would go there or a nursing home to talk about topics like blood pressure and weigh things that you know about, which I think is an interaction with the public as well as general physicians to try to get the message across.

Qi Qin: Yeah, basic education is essential for all patients and clinical residents. Most schools are visiting and teaching more biology, health and prevention, and I feel that schools are also crucial.

Qi Qin: You always emphasized that working on one or more projects makes the daily routine more meaningful, but as young neurologists, we usually have a heavy workload. How can you keep balance among many projects, clinical daily life, education and basic research? Could you please offer us some advice?

Louis Caplan: There was a famous philosopher who said that he had not been upset if someone told him that he was not a great pianist or violinist, even though he played both, but he got very upset if they told him that he was not good at philosophy. So none of us can be the master and expert for everything, so I think that one of the lessons is to pick out a subject, then center on and develop it. As an example, my professor in Neurology, Mr. Denny Brown, was originally from New Zealand and then the United Kingdom, after which he came to the United States, and asked one of the residents to give a talk on spinal cell degeneration. The resident said that, "I don't know anything about spinal cell degeneration." Dr. Denny Brown said that, "Wherever there's a library, there's a journal; go to the library, read about it, and give us a talk on spinal cell degeneration." Then he spent a couple of months doing that and then gave an excellent talk, who was very systematic and divided up, so Dr. Denny Brown said that maybe he should write it up because it's not known, saying right up what he did and would send it to the medical journal *Brain*. So the doctors started to read this, as it was said that this guy knew about spinal cell degeneration and would send them patients. Therefore, he began to receive patients with spinal cell degeneration while studying and wrote a little bit about them, after which more and more patients with spinal cell degeneration came, and he became an expert in spinal cell degeneration. I once determined that I couldn't be an expert in everything, but if there are certain things that I'm are interested in, which I have collected, I may become extremely excellent at them, and people will give me patients in that field. Now it happens in other fields, so for cancers, there are centers where people specialize in multiple myeloma, math bell disease or breast cancers. I've sort of gotten very interested in poster circulation in veritable basil disease, so I paid special attention to reading about collected materials of patients with that disease, who weren't interested in that. However, there is another aspect that isn't researched, so if you do an ordinary clinic and see lots of patients, some of whom don't have any of the mostly routine things, but see heading patients' most routines, the thing is that can you learn even from patients that are sort of routine? I became interested in visual function and behavior, so I decided to learn something about them even from people who were quite normal and had a variety of things, so I collected photographs from many publications, and there were excellent pictures for the national geography of different regions. Most of the photographs I've collected have distinct sides; *e.g.*, something is going on the left side, and something is happening on the right side, there might be people, animals and plants, or there could be some actions. I'd then put them on cards and display them to patients, so as to watch how they looked at the

pictures, did they look to the left, turn to the right, learn the details, figure out what was going on in the pictures, and learn the details? Who would say the man on the left? Was he short, tall or bald? Was he holding anything? So, I received some information on what regular people did, and used it for people who might be doing something wrong, so that I would still learn something important about visual behavior and how people perform it, and the day would be a lot more interesting than just working clinically. You could be very interested in other neurological signs or other types of questions, or you could become interested in history and hobbies. On the hobbies that individuals have, if concentrating on one item that you're working on every day, you can obtain some more information. So, it's profitable even for routine cases, if you're working on something and trying to see how normal people do certain kinds of things, I think that the above makes it much more interesting and much livelier.

Qi Qin: Okay, thank you for your time, I learn a lot from you and as for me, in the future, I will focus on one point, maybe something I'm interested in Alzheimer's disease, and I will find the focus of that.

Louis Caplan: It can be more than one, so if you have two, three or four things, then every patient you know will be better for some things while worse for others, as you're constantly gathering information on things you're interested in.

Qi Qin: Thank you Professor Caplan, and I would like to thank you for advising me as well as all of us, thank you.

Louis Caplan: My pleasure yeah, if there's anything I can do to help you, feel free to email me.