

## Interview With Malcolm Bagshaw, M.D., FASTRO

By Sarah Donaldson, M.D., FASTRO, and David Larson, Ph.D., M.D., FASTRO

[ASTRO Home Page](#)

[List of Interviews](#)

**Malcolm Bagshaw, M.D., FASTRO, was raised in Tecumseh, Mich. He completed medical school at Yale University. Initially, he started a surgical residency and then moved back to Michigan to attend the therapeutic radiology program at University of Michigan under Isadore Lampe, M.D. After residency, Dr. Bagshaw worked as a faculty member at Stanford University. He is also known for working with Varian to develop the first simulator, being the first radiation oncologist to implant gold markers for prostate localization and serving as chairman of Stanford's radiation oncology department.**



This conversation with Malcolm Bagshaw, M.D., Sarah Donaldson, M.D. and David Larson, M.D., Ph.D., was conducted on September 23, 2003.

**Question: Dr. Bagshaw, could you tell us where you were born and something about your early family life and education?**

Dr. Bagshaw: I was born in Adrian, Michigan, but lived most of my young life in a nearby town, Tecumseh, Michigan. My father was a self-educated, self-made man. He spent most of his working life as the city engineer for the little town of Tecumseh.

**Question: Was it clear to you at an early age that you were going to get an education?**

Dr. Bagshaw: Absolutely. No doubt about it. Every time my dad had at least two beers, I got a two-hour lecture — usually the same one — the most important thing for me was to get an education and to go to college, because he never had that chance.

**Question: What did you do after high school graduation?**

Dr. Bagshaw: As it was during World War II, there weren't many choices. The Navy had a program called the V12 program; I applied. I went to Detroit to take the examination, passed and was admitted. I declared an interest in medicine, so the Navy set out to make me a doctor. They sent me to Wesleyan University in Middletown, Connecticut, which turned out to be a great place for me. I was placed in classes with the civilian students, no different than a regular college education except that it was accelerated. I went to school full-time and took about 20 units a semester, instead of 16 like the civilian students. By that time, I had met my future wife, Muriel Hanley, and I decided that since she was in Connecticut College for Women in New London, that I'd like to go to Yale and be near her. I applied to Yale and got my wish.

**Question: At this stage, were you aware that radiation was being used as a cancer treatment?**

Dr. Bagshaw: Yes. I had an extraordinary professor of radiology named Hugh Wilson. I took several elective courses with him. It was in diagnostic radiology, not strictly radiation therapy and one of the best courses in medical school. He'd throw a couple of films up and say, 'Bagshaw, get up there and tell us what's on those films.' Never having seen an X-ray before, it wasn't so easy. He would badger me until I finally saw something.

**Question: What was the chain of events that led from that point ultimately into a career of radiation oncology?**

Dr. Bagshaw: I did a straight surgical internship and a first-year residency in surgery. About two months into my second year of residency, I acquired acute glomerulonephritis. I was put into the hospital and then home for a year of bed rest. As I thought about my future during that time, I wondered if I really should continue in surgery, thinking perhaps it was too physical. I didn't know what my health would be like in the future. I had acquired some interest in radiology and I decided that I would transfer out of surgery into radiology. I knew a lot about the University of Michigan and had expected to go there. It was somewhat of an accident that I had gone to Yale. So I applied for the Michigan radiology residency program and got accepted. As soon as I was allowed to get up and around again, I started in the residency program in Ann Arbor.

I took to radiology quickly and I think the reason that I went into therapeutic radiology was because it was like surgery. My real interest was cancer and I rationalized that it didn't matter how I treated the cancer, whether I did it with surgery or with radiation. Then I ran into a most extraordinary man who was head of the radiotherapy division in Ann Arbor, Isadore Lampe. We all called him 'Lampy.' He was more than my mentor by a curious coincidence. When we rented a house in Ann Arbor, the neighbor next to me was already in the second year of residency; his name was Philip Rubin. And the neighbor on the other side of Philip Rubin was Isadore Lampe.

We were the first department in the United States to get an Atomic Energy Commission of Canada cobalt unit. I had quite an opportunity because when we first got the cobalt unit, all of the construction of depth dose curves had to be done. They didn't come with the machine. We had a good physicist and good physics department, so Dr. Lampe assigned me to the physicist who assigned me to taking all the data and drawing all of the depth dose curves. I sat at a large drawing table and constructed the whole set of depth dose curves for the cobalt machine.

**Question: Tell us how you got from Ann Arbor with Dr. Lampe as a resident, out to Stanford with Dr. Kaplan.**

Dr. Bagshaw: I had met Dr. Kaplan first as a medical student and again when he came to Yale to give a series of lectures. My friend Dr. Crowley had taken a position at Kaiser in Southern California as a surgeon. He tried to recruit me to be a radiologist there, so he invited me for a visit. As it turned out, I didn't want the position at Kaiser, but I liked California, so I called up Dr. Kaplan and asked him if he had a position and he did.

**Question: What was it like being a radiation therapist at the Stanford Hospital?**

Dr. Bagshaw: We had the only linear accelerator in the United States at that time. It was handmade in our physics department and suspended in an old Van de Graaff mount, which was a ceiling-mounted machine with a big round bell about a yard in diameter, with a little accelerator pipe in the middle of it. It had good motions; it could go up and down and angulate this way and that. We put a rotating chair in front of it so that we could give rotational moving therapy, 360-degree rotation. It operated at a nominal 6 MV and about 2 MeVs of pure electrons. At Stanford, we were one of the first places to really develop super voltage radiation at those energies.

**Question: So it was actually dynamic therapy?**

Dr. Bagshaw: Yes. But the patient rotated — not the machine. By that time, Dr. Kaplan had hired two rather remarkable technologists — Pat Steed, who was a dosimetrist and did all of the treatment planning, and Joyce Lawson, who was the technologist.

**Question: When you were at Stanford, were there therapists assisting the doctors?**

Dr. Bagshaw: Yes, they did the setups. But we had another thing that was quite unique. We had an image intensifier unit and a diagnostic tube attached to the linear accelerator. So I did most of my really precise setups, like pituitary treatments, under fluoroscopic control. We did port films at that time, too. We used the diagnostic film and then we double exposed it so we could take a very nice port film with the double exposure using the diagnostic tube. We did develop a simulator later. As a matter of fact, I was one of the people that worked with Varian to develop that first simulator.

**Question: In Ann Arbor, you had the first cobalt unit and at Stanford you had the first linear accelerator, right?**

Dr. Bagshaw: Correct. When Varian developed the first accelerator that they made commercially, there were several people involved, but I was the only one that had any experience with cobalt. I kept telling the physicists we should get rid of the ceiling-mounted accelerator that moved up and down and try to make it like a cobalt unit, which was more versatile. The key to being able to do this was the accelerating tube for the electrons which was about six feet long. I made the suggestion that why not let the electrons come out of the vacuum tube of the accelerator before they hit the gold target to make the X-rays. That way, as the electrons came out, you could turn the electrons 90 degrees and move the gold target down at 90 degrees and get a vertical beam. As we talked that through, our physicists said they thought they could do that; that's how that came about.

**Question: There was an important technical advance when you were localizing the prostate and the vocal cord patients. You saw those patients at treatment and you took port films actually doing a physical exam simultaneously to be sure you were on target.**

Dr. Bagshaw: That's correct. I have a couple of port films that I took with my finger on the prostate. But that did give me an idea and I think I was probably the first one to put gold seeds in the prostate for localization, which we did after I started worrying about my finger. And for the larynx treatments, since we had an image intensifier, I set all of those patients up by actually looking at them. I could see the vocal cords. That, too, was really quite a small field, four by four centimeters; you actually could localize the vocal cord right into the center of the field.

**Question: When you became chairman of the department here at Stanford in 1972, what challenges did you face?**

Dr. Bagshaw: The challenge mostly had to do with how to deal with 40 other radiologists. At that time, our department was still united and I was chair of the entire department which included diagnosis, nuclear medicine, radiation oncology, physics and radiation biology. It occurred to me to set up each of these separate divisions as more or less little departments within a department and to select directors for each one. We had very good cooperation between the divisions and we didn't have any serious problems.

It became obvious as time went on that diagnosis and radiotherapy didn't have that much in common and there was no need for them to be organized in a single department. So, I engineered the separation of the department into two departments — one that had

diagnostic radiology and nuclear medicine and the other department was radiation oncology and radiobiology.

**Question: You're known for many areas and have written articles in many areas, but one you're perhaps best known for is prostate cancer. How many prostate cancer patients have you treated?**

Dr. Bagshaw: A little over 1,200 — somewhere between 1,200 and 1,300.

**Question: How did you get interested in prostate cancer?**

Dr. Bagshaw: I got interested in it because of a urologist at the Stanford Hospital, Dr. Honeby. He was a very likable urologist. One day he came down to the department and said, 'Say, young fella, I got this patient with prostate cancer. Do you think you could treat that with one of those things?' So I said to Dr. Honeby that, yes, I thought we could treat prostate cancer. And at that time, the accelerator was fixed and the patient was on a platform that was capable of rotation, and so the first program that I developed for treating the prostate was to have the patient stand and we would actually strap him to a post. We used a small field thinking only of the prostate itself. At that time, there really wasn't a lot known about the lymph node distribution of prostate metastases. And we set up the patient so that he could rotate and developed the high dose of radiation precisely to the prostate.

**Question: Tell me about how you got interested and involved in ASTRO.**

Dr. Bagshaw: I guess it was a goal to become a member of ASTRO and to be invited to join. I remember ASTRO grew out of a Radium Society meeting in San Diego when Bill Powers, Herman Suit and I got together. I think Bill Powers actually grabbed Herman and myself and said, 'Let's meet this afternoon. I've got something I want to talk to you guys about.' So we thought it was time that radiation oncologists had their own organization separate from the Radium Society. We started to think about establishing a separate organization which became ASTRO.

**Question: It started as the club ASTR?**

Dr. Bagshaw: Yes. There actually was a club that was run by Dr. del Regato. We put together the idea that the club ought to be formalized and we presented this idea to Dr. del Regato, essentially stealing his club away. But he bought the idea and was very supportive and I'm sure without his input, it never would have flourished.

**Question: If a young medical student came to you today and said they were thinking about a career in radiation oncology, what advice would you give?**

Dr. Bagshaw: I would ask why and then I would see whether or not the reason seemed to be good. Then I would expand on that and encourage him or her if I really thought he or she should do it. I would give some insight into the fact that it is a very serious business and that every patient that you see has only one of two outcomes. They either are going to live or they are going to die. That is a very powerful responsibility to have in patient care. I would try to be sure that a student understood this is going to be their responsibility.

**Question: If that same student asked you to predict what radiation oncology would be like over the next 15 or 20 years, what would you say?**

Dr. Bagshaw: Over the next 15 or 20 years, I would say it would be much the way it's been for the last 15 or 20 years, that is, constantly improving but by rather short steps, time by time, both technically and theoretically. It's been a constant but persistent improvement, with improved survival rates. Of course, there are a lot of things that enter — earlier diagnosis and better relationships with the other doctors with whom you work.

**Question: You accomplished a tremendous amount in your career and you have been honored in many ways. Is there anything that stands out in your mind as being most satisfying to you personally?**

Dr. Bagshaw: Yes, I think it's having selected and trained a very talented group of young people that became excellent radiation oncologists and were able, then, to pass along to their patients the benefits of radiation treatment.

**Question: You have always been a man ahead of the times. Thanks so much for this interview. It has been great fun to speak with you.**

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[ASTRO Home Page](#)

[List of Interviews](#)