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SERIES



**Creating  
Environments for  
Cancer Care**

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# Creating Environments for Cancer Care

Cancer rates in the U.S. are expected to rise as the Baby Boom generation continues to reach retirement age. The American Cancer Society estimates there will be 1.4 million new cases of cancer diagnosed this year alone. As a result, today's cancer centers must be built for efficiency to streamline patient flow and improve workflow. Cancer centers must also address the unique characteristics of the disease, providing healing environments to enhance the patient and family experience.

To examine trends in cancer center design, Health Forum and the American College of Healthcare Architects convened a group of architects and their health care clients. The group met August 14 in Chicago for a closed-door dialogue.

The *Health Facilities Management* Executive Dialogue Series provides frank discussion of issues and ideas by health care executives and industry experts focused on challenges facing hospitals. This series appears periodically and is also available online at [www.hfmmagazine.com](http://www.hfmmagazine.com).

**MODERATOR** (Bob Kehoe, *Health Facilities Management*): Aside from the clinical aspects of the disease, how do cancer patients differ from other hospital patients in terms of their physical and emotional needs? How are these needs addressed in the design process?

**BRUCE KNEPPER** (Burt Hill): One of the things that is different about cancer patients is that they keep coming back. A heart patient or a general surgery patient will most likely have a procedure and go home and get on with their life. But for cancer patients, it's not an afternoon event.

**DEBRA BEMIS, R.N.** (Kish Health System): Because of that, cancer patients want an atmosphere that promotes healing and wellness. They don't want an atmosphere that makes them feel any sicker than they already are.

**DIANNE SHANABRUCH** (Central DuPage Hospital): Cancer is a family disease. The exam rooms and conference rooms have to be large enough to accommodate family. We are building a new cancer center and we are incorporating space for families in both our infusion area and our clinic.

**REBECCA LEWIS** (DSGW): We have to design to accommodate patients going through different stages of the disease. For many cancer patients, their short-term memory is affected. That impacts their wayfinding abilities; wayfinding is directly related to short- and long-term memory. The cues that we, as architects, rely on to move people through a facility simply won't register for many of these patients. Proximity is something we have to be concerned about. We can't rely on our typical system of wayfinding.

**TANYA REPKA, M.D.** (St. Luke's Oncology and Hematology Associates): The layout needs to be easy for patients to get in and out. They may be coming daily, going to the lab or to X-ray. Sometimes it takes all of their strength just to get to

the clinic. They don't need to schlep from one side of the campus to the other to get their tests and treatments. It needs to be easy for them to get their blood drawn, have their radiology procedure, see the physician and get to infusion. All of those



**One of the things that is different about cancer patients is that they keep coming back.**

**Bruce Knepper**

things need to be fairly easy. That's very important for our patients.

**MICHAEL MORAN** (RTKL): Along those same lines, it may be a good idea to create a separate entrance for the patients who are coming every day for treatments. This entrance should be close to the treatment areas.

**LEWIS:** Once the patient is done with treatment, they may not want to walk through a crowded waiting room. They may not be feeling their best. So that's something to consider, having a second exit where the patient can get out and be picked up by a family member or whatever.

**TOM GRIBBIN, M.D.** (Saint Mary's Health Care): About 95 percent of can-

cer care is delivered in the outpatient setting. That raises the question of what the role of the hospital is in the first place. The hospital often serves as an umbrella organization because many cancer patients are never hospitalized. Some patients do require surgery or radiation therapy over the course of their care. If the providers of these services aren't talking, then the care is going to substantially suffer.

That's the case in many communities. Each component is treated as a disparate service. In order for patients to get the care they need, they have to spend a lot of time driving and parking. An output cancer center is an opportunity to bring all of these services together. That is a complicated dynamic in every medical community.

**DEBORAH SMYTH, R.N.** (Thomas Jefferson University Hospital): We just opened a new infusion center. We created space in the infusion bay large enough to accommodate families. In our previous space, the bays could hold maybe one family member, and the nurse had to climb over that person to get to the patient. Now they have plenty of space. But we've learned from some patients familiar with both spaces that they now feel isolated from the other patients. We never expected that. We thought they were going to be thrilled with this beautiful new area. They do love the space, but we've heard from them that they miss some aspects of the old space. We probably need two spaces—a private space and a community space where patients can gather and talk and compare stories.

**SHANABRUCH:** We did a focus group with our patients. We are in a temporary space until we build our permanent space. Some patients want privacy and some patients want to have an area where they can sit side by side with another chemo patient. We are designing a flexible space so patients can choose to have a more private space or to have an open space. That becomes a little more complex, when you have to have nurses be able to see the patient at all times.

We have a mix of private and semi-private rooms. And we have side-by-side bays so that two patients can have chemo together. We have created a homelike environment in our infusion area. We try to hide as many things as possible within cabinets so the place doesn't have a medical look about it. We use lamps rather than rely upon overhead lighting. We've added a snack area for patients. Some of them need to snack frequently, so we have cookies, crackers and juices available.

**STEVEN JACOBSON** (HKS Architects): The notion of choice is a fundamental issue, not just for the patient, but also for families. Family members, as part of the care team, need to be able to go to different places within the facility—be it a cafe or a garden. They can periodically check on their loved one, but they don't have to stay there for four hours. It creates a positive dynamic.

**DOUG ABRAMS** (BSA LifeStructures): Successful projects balance nurturing and performance. For example, we did an infusion area on a semicircle layout. The infusion bays were all on the outer part of the circle, and the nurses' station was in the core of the circle. When you walk through the infusion area, you don't see the nurses' station unless you turn around. The nurses still have absolute visibility to the infusion area, but the space feels less institutional. It has a more healing, nurturing feeling to the design.

**REPKA:** For some of us, the infusion space now is being used for other purposes. The Joint Commission no longer allows certain transfusions to be performed in physician offices. We're also bringing a whole new group of patients into our infusion center that doesn't have cancer. They may be getting treatments for rheumatoid arthritis or some other rheumatology issue. It's something we need to think about.

**LEWIS:** That's true. It ties into determining the patient demographics and design-

ing spaces to meet the needs of all of these patients.

**GRIBBIN:** The bottom line is that infusion services are going to expand across multiple medical specialties. A lot of what we currently do will become treatable through oral chemotherapy agents in the future. These treatments will require less care but not less management.



**The notion of choice is a fundamental issue, not just for the patient, but also for families.**

Steven Jacobson

**LEWIS:** How does that work? Does the patient still come in for treatment?

**GRIBBIN:** A patient may receive one infusion agent plus a pill five days a month. The oral treatments run about \$4,000 a month, for instance, and affects the patient's blood count. If they send the prescription off to Medco and get it through the mail, it will arrive sometime within a 45-day window. This is occurring while you're trying to get the patient on set 28-day cycles. In order to manage that, you need to get the patient into the facility. You need to know that the dose is correct and the other medications that

the patient is taking. We're dispensing now in all our facilities. Patients are coming in and often getting infusions, and they are given an oral agent to take home. These oral agents are going to be huge in the future.

**MODERATOR:** How does design impact the delivery of care? To what extent can effective planning and design positively impact care delivery, particularly with regard to patient access, reducing waiting times, and improving patient flow throughout the organization?

**MORAN:** Technology is becoming more prevalent and health care is becoming so dependent on it. It's becoming a bigger issue. We should all have a technology planner on our team as we go forward with any health care facility to ask the right questions. We need to ask our clients where they are with this and where they are going. We need to build the proper infrastructure within the project to accommodate their future plans.

**SHANABRUCH:** We're working now on a new cancer center, and all services will be on the same floor. I didn't realize the complexity and the communication issues that we encounter by having our areas on two separate floors. We're focusing on patient wait times. We're working on how the patient flows through the system. Our intake area will be next to registration and then we'll have the lab. We want to improve turnaround time in the lab so patients aren't waiting for lab results prior to infusion. The pharmacy needs to be near the infusion center. The proximity and placement of the different activities has been a key component of our planning for patient flow and staff flow. As Tanya said earlier, patients have only so much energy per day. We are trying to tighten the turnaround time for everything so that we can reduce the amount of time that the patient has to be in our facility.

**JACOBSON:** In the design of a cancer center, it's important to focus on your

biggest priorities. There are strong, logical arguments for locating the pharmacy next to the infusion bays because that reduces the time and distance that the pharmacist travels to the patient. But if the pharmacy is just a little farther down, it may reduce the walking distance for the patient and make for better patient flow. The team has to agree on the priorities; that will influence the design. And one would hope that the patient becomes the center of that decision-making process that shapes the design.

**REPKA:** It's important to get the key players involved early. Too often, the administrators sit down with the architects and discuss the design without talking with the front-line staff about how things really work. If that's the case, you may end up with a gorgeous space but it's not functional.

**JACOBSON:** From an architect and designer standpoint, that involvement is critical and fundamental. For our project with Saint Mary's, Dr. Gribbin committed four hours on Thursday afternoons for

**CONSENSUS POINT 1. PROXIMITY**

**Proximity of services is a critical component of cancer care design.**

- Cancer patients may suffer from short-term memory loss and cannot rely on traditional wayfinding methods. Proximity of services can help with this issue.
- Cancer patients often have low energy levels. Ease of access can improve the patients' experience, reducing wait times and improving patient satisfaction.
- Patients receiving treatments or diagnostic tests may not want to walk through a crowded waiting room afterward. A separate entry and exit can put the patient more at ease.

a year and a half. It requires commitment and leadership from a lot of directions to shape and influence the design.

**ABRAMS:** In the design world we like to say that we listen first and design second. But it's really a continuum. It's listen, design, listen, design, etc. We need input from the staff, from the hospital, patients and families and the community. It's a continuous cycle. We also need to get input post-occupancy on what works and what doesn't work. Design can help work processes by listening and by building proximity for the staff for the simplest of things like locating the pharmacy close to the nursing core where they're mixing and distributing medica-

tions. It's important to consider the proximity of support space for schedulers and others so nurses can concentrate on treating the patient. From the patient's perspective, we need to create a healing environment that helps release stress. We need an environment that builds confidence.

**MODERATOR:** Debra, as a nurse, how do you feel about what you see in terms of design? Is it meeting your needs?

**BEMIS:** In working with the staff from the design that we are doing, they're mostly focused on what is best for the patient. Is the nurses' station in view of the infusion bay so that they can see all of them? Are the dressing rooms located close to

# panelists



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**MODERATOR**  
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the radiation oncology treatment areas? Is there privacy for the patients? Our nurses do want some workspace that's close by. And we've built in private space for mixing and preparing medications, which is a big push now in all health care facilities.

**SMYTH:** We've carved out space for the lab and the pharmacy. That's been a huge satisfier with patients because it has cut down wait times. It's important for them to get through the day with the least amount of stress. Our clinic is upstairs, but we put two exam rooms down in the infusion center so if a patient becomes ill they don't have to go back upstairs.

**MODERATOR:** Let's discuss the discovery process a bit further. Who are the critical members of the design process?

**JACOBSON:** Physicians need to be involved in the process early and often. The same is true for all other clinical disciplines such as nurses and pharmacists.

**KNEPPER:** Administrators are typically holding the purse string. They're the ones that eventually tell the architect what to do.

**JACOBSON:** That's part of the discovery process in and of itself. We need to achieve a common vision early on so that we're not having constant battles down the road.

**MODERATOR:** That's a great point about reaching a consensus with administration so that everybody's clear on what the direction's going to be. How do you involve patients and families in the process?

**ABRAMS:** Focus groups are very helpful, as are one-on-one discussions with patients. Of course, the staff has a lot of direct experience, and they hear the complaints and the compliments. I'd like to think that organizations design for demographics and for the culture of the community. Every community is different.

**JACOBSON:** There has to be time built in to review and understand with respect to what a focus group says. That process takes time.

**SHANABRUCH:** On our team, we definitely had IT. The other great piece we had was clinical engineering. We needed someone familiar with the safety issues and with regulations.



**We should all have a technology planner on our team as we go forward with any health care facility to ask the right questions.**

Michael Moran

**BEMIS:** We also involved some physicians because of the radon use and to help us with location issues for our CTs and other equipment. They provided great advice. We moved some things because of their recommendations.

**GRIBBIN:** This raises an interesting issue. We are building an 83,000-square-foot, \$42 million facility. It's 100 percent financed by philanthropy. The role of philanthropy in supporting these projects for nonprofit organizations is critical.

Physicians are some of the biggest fundraisers, given the chance. They raise money by painting a vision. If it's just

their vision, it's not going to go very far. So we have to develop a unified vision of the organization.

Philanthropy is not a check that someone writes and simply goes away. It's a lifelong relationship. The donors must be welcomed into the process. It sounds kind of crazy, but we included space for our cancer center fundraisers. It's an open space. We have regular events there, including weddings and nurse graduations.

So what do you get from listening to your physicians? You get access to a different pool of capital than you would get otherwise. Some of our donors have good ideas. We were the second health care facility that was LEED certified in the country. That came about because it was important to one of our donors. It's been a great thing for us. Donors are a huge constituency that has a role in this process.

**MODERATOR:** Cancer rates are expected to rise in the future. What can designers do to extend the lifespan of facilities?

**ABRAMS:** Flexibility is crucial in anticipating the future. You have to anticipate future medical developments. There are a lot of unknowns too. Flexibility in designing for the future is really a key element there.

**KNEPPER:** The anchor of cancer care centers is radiation therapy. That's the physical plan anchor. In terms of construction costs, it eats up a bulk of the dollars. The infusion spaces are relatively inexpensive to build. The pharmacy requires some investment. It's these areas that provide the most flexibility.

**MORAN:** In the future, cancer centers may become more of a research facility than a treatment facility or a combination of both. One of the problems on the flexibility side comes with radiation. Cancer centers have these huge concrete boxes anchored to their facilities. How is that flexible? There are a couple of companies now that make modular radiation vaults. One of them is a large concrete

block system, and another one is steel. The problem with them is that they are really lacking on the aesthetic. But if that form of treatment is ever usurped by gene therapy or immunotherapy, it can be taken apart, and the space can be reused.

Aesthetics are important, though. The first time I walked into a linear accelerator, it was completely intimidating. I'm healthy. I can't imagine what a patient must feel like when they see the equipment. We have to pay particular attention to how that room is treated.

**JACOBSON:** We've tried to reduce the level of intimidation that these pieces of equipment provide. We've created a doorless entry to the vault. That way, once the patient enters they don't hear the door slam shut and feel isolated.

The other thing we try to do is create a distraction within the vault itself. A pretty simple way to do that is to incorporate elements on the ceiling, such as color and nature references. Patients need something to shift their focus from the equipment.

**KNEPPER:** We've done some vaults where we've made the maze very long so that we don't have to close the door until you ramp the machine up to a high level, which is kind of nice not having that door close and you're in there.

**ABRAMS:** That plays out to the building's exterior as well. If you can see the vault bulging out, it makes it more intimidating. The vault needs to be incorporated into the exterior of the building design.

Another thing to consider is equipment replacement. Master plans should outline a path of replacement. The floor load must be considered. Future expansion possibilities must be considered.

### CONSENSUS POINT 2. THE PLANNING TEAM

**The planning team for new cancer centers should be multidisciplinary.**

- Planning teams should include administration, nurses, physicians, pharmacy, clinical engineering, IT and infection control, among others.
- Feedback should be sought from patients and family.
- Space should allow for collaboration among members of the clinical team.

### CONSENSUS POINT 3. PHILANTHROPY

**Philanthropy is a major source of capital for cancer centers and may impact cancer center design.**

- Major donors may want a role in the planning of the cancer center.
- Physicians are often major fundraisers. Including them early in the planning process can create a shared vision and buy-in.
- Space should be included for fundraising events. This space can be multi-functional to allow for education and other community activities.

**REPKA:** We need to remember that as we go forward, we will have more cancer survivors. We've got to figure out how we will be serving those patients in the future. How do you build that into your design?

**SMYTH:** As cancer becomes treated more as a chronic disease, we get very different needs 10 years out. The long-term patient needs to come back for a quick appointment or treatment. They want to come in quickly and get back to work and forget the experience. For the newly diagnosed, it's very different. These patients have a very different mindset.

**LEWIS:** The long-term cancer patient demographic is shifting so profoundly. We need to look at how that will impact the kinds of spaces we develop in response to their needs.

**MODERATOR:** We have several different types of patient populations: the first-time cancer patient; long-term survivors; and those who face immediate life-threatening situations. What can be done in the design and planning processes to address these patients' different needs?

**SHANABRUCH:** We actually need to add another category here, and that's prevention and detection. We are struggling with how to bring the detection and pre-

vention piece into the cancer center. We go from one end of the spectrum to the other. We want to educate, have early detection, promote prevention, support the cancer patient throughout the course of the disease. It's a challenge.

**LEWIS:** That is really an important point, especially with genetic testing. If you know you are predisposed to a disease, you will need regular detection. This hasn't been integrated into the whole process of delivery of care.

**MORAN:** It might give a whole different meaning to comprehensive cancer center. The comprehensive cancer center of the future might be the detection and prevention center, the treatment center, the long-term survival wellness center, something totally different than it is today.

**GRIBBIN:** That's a decision that many organizations are trying to make, particularly with breast cancer. Do breast imaging services go inside or outside of the cancer center?

**MORAN:** We've run into that issue. We've heard anecdotally from patients that they don't want to go to the cancer center for their diagnostic breast exams. But once a diagnosis has been made, they want to be treated at the cancer center.

**REPKA:** To get back to your question, you have to group the different patient populations. The dying patient, the hospice patient has a different set of needs. They receive care from a different set of specialists than other patients. They may need social workers and other ancillary services. Sometimes the physician is the

least important of all of those.

**BEMIS:** Newly diagnosed patients are more focused on wellness. They may be there for their infusion, but they are also interested in alternative therapies such as Tai Chi and or Bacci therapy.

**ABRAMS:** The programming seems to be expanding to emphasize detection, education and prevention. The older generation mostly does whatever the doctor says. The younger generation wants to get more involved and wants to be more educated.

**GRIBBIN:** There's an increasing role in multidisciplinary clinics and creating space that works for what is important. I run into my radiation therapist and other clinicians several times a day. The 30-second, face-to-face conversation can do more than a nine-page letter. These clinics help bring people together.

**LEWIS:** Tom, what kinds of spaces really push that whole collaborative approach further? Is it a doctors' lounge? Are the offices next to each other?

**GRIBBIN:** About 50 percent of the interactions are on the phone, and another 40 percent of the interactions are in a hallway. The doctors' lounge is a dying concept. The surgeons still have a lounge because of operating-room turnaround times. But the younger doctors want to work longer shifts so they can have shorter work weeks. These communications have to happen as seamlessly as possible. I can call a colleague and discuss the course of treatment. Or I may have a 10-

#### CONSENSUS POINT 5. STAFF SPACE

Space is a top commodity for any health care facility. Staff space is often reduced to allow for larger patient and family areas, among other things.

- Cancer centers are strenuous, emotional work settings. Clinicians need an area of respite where they can relax and regroup.
- Staff space should provide an area for clinicians to collaborate and have private conversations as well.
- The provision of staff space can boost morale and reduce turnover, essentially creating a return on investment for the space.

second exchange in the hallway. Either way, we are exchanging the necessary information so that we are all in real time.

**REPKA:** We have a doctors' dining room. I can get so much done there if I go there for lunch. I can eat and talk to two pathologists. I might be able to catch up with a surgeon or another specialist. We also have offices close together. I can talk to another physician about a diagnosis or treatment. It's really convenient.

**SHANABRUCH:** I don't want to lose sight of clinical research too. We put space in our new cancer center for clinical research. It's important. The researchers need access to the pathologists, the radiologists and the physician.

**MODERATOR:** Let's move on to radiation. What are the special considerations for this area?

**ABRAMS:** Flexibility, of course, and positive distractions for patients. Privacy is important, but the issues vary by community. Some may want separate waiting spaces for men and women. In other areas, that's not as important.

Equipment replacement is a big issue

here. It involves the width of the doors, the thickness of the floor slab. There are a lot of different ways to accommodate that. But we know it's going to change. We don't always know what the next piece of equipment is going to be.

**MORAN:** We discussed the vault design a bit earlier. One of the nicest treatments of a vault that I've seen was in Canada. When you walk into the vault, the linear accelerator is not at the footwall. It's on the side of the entrance so you don't see it first thing. Instead, when you enter the room you see a lounge seat with a pillow. There's a little natural light grazing the wall as it comes down and hits some plants. I don't know if they are real or fake, but it is a nice thing to look at when you walk into the room.

**MODERATOR:** What's important in regard to the diagnostic areas? How do you design for patient confidentiality?

**GRIBBIN:** I don't know of any health care providers who embrace HIPAA. The issue is more about the paper trail. The HIPAA police aren't going to come into an infusion center and cite each instance where someone is able to overhear a conversation. It's not that we don't want to respect the spirit of what they're after, but the contortions that have been created in medical practice to meet the paper trail part just never made it to the clinic.

**ABRAMS:** There has to be a space in each area for private conversation, whether it's a consultation room, an assessment room or an exam room. That's just huge, especially from the patient perspective. I

#### CONSENSUS POINT 4. HOMELIKE INFUSION SETTINGS

Infusion can be a lengthy, emotional time for cancer patients. Creating a homelike setting that includes space for families can reduce stress for patients.

- Use of lamps instead of overhead lighting can make the setting appear less clinical.
- A flexible space allows for patients to choose whether they want to receive their treatment in private or among other cancer patients.
- The development of oral chemotherapy is on the rise. This may reduce the need for traditional infusion bays but may increase the importance of proximity of the infusion area to the pharmacy.

never understood the HIPAA thing until I became a patient. Patients are asked very personal questions. If they think someone may overhear their response, they may not answer truthfully.

**JACOBSON:** There does need to be space for the exchange of clinician information.

**LEWIS:** It's important on the privacy and safety side to consider the two-entry system. From a privacy standpoint, you may have someone that just doesn't feel like they can walk through a waiting room. They may want to come in a side entrance. From a safety side, we have folks that are immunosuppressed. We don't want them exposed to other patients in the waiting room. If patients really need to be brought in and out under very safe and controlled conditions, we need to provide a secondary entry or exit access point from any one of these types of spaces.

**SMYTH:** And I think from a patient safety point of view, too, it's still really important to have space for starting the medication. In our oldest patient center, patients are so close together. As a nurse, you practically had to find your way up to their tubing to make sure you were going to the right IV pole. So getting patients started in a private area and then letting them go to their common area would be helpful.

**REPKA:** We do that. Patients have their blood drawn and their ports accessed in a separate room, and then they get moved.

**ABRAMS:** We should mention patient safety and evidence-based design issues. There's a lot of information out there, and a lot of it is geared toward patient rooms. We've been talking mostly about outpatient areas. There's a lot of evidence-based design out there as far as locations of bathrooms and grab bars and so forth.

**REPKA:** Most people are using the alcohol rubs now. We need to have the dis-

pensers readily accessible. It promotes better hand hygiene. The Joint Commission will look at how much sanitizer you use. They will look at how much sanitizer you've ordered over the past year, based on the number of employees you have.

**SHANABRUCH:** The thing that we have encountered a lot with respect to privacy is that really sick patients don't want others to see them sick. We've been careful



**It's important to consider the proximity of support space for schedulers and others so nurses can concentrate on treating the patient.**

**Doug Abrams**

with the patient curtains for these bays, because that's tough. Women who have lost their hair don't really want to have the turban on the whole time. There's a lot of things that cancer patients are concerned about that we have to not only design for but have our processes help facilitate.

**MODERATOR:** Knowing what we know today, what types of design considerations are there for some of the newer technologies and treatment modalities?

**GRIBBIN:** Again, the movement to oral agents will be big. If I'm building a cen-

ter, I would put a dispensing pharmacy in the center. Those pills need to be sitting on the table with the patient and the nurse to educate the patient about taking the medication. The people responsible for chemotherapy need to be able to do that complex teaching. These agents aren't just another pill. They can make the patient very sick. There's also a huge revenue stream that's associated with this that's going to have implications for whoever owns that stream, whether it's the hospital or the physician practice. Those services need to be contiguous with the patient.

**REPKA:** There is going to be more targeted therapy. Some of the biologics will have unique, long-term side effects. We're going to have to think about how we incorporate that into practice. It's not that patients get chemotherapy, take a pill and go home.

**GRIBBIN:** There was a time when the infusion nurse spent about 75 percent of time on infusion therapy, 20 percent on teaching and managing side effects for those patients and 5 percent on answering calls. In 10 years, with the advance of oral agents, that nurse may spend 10 percent of time infusing a patient and 80 percent of time on the phone managing the side effects.

**MORAN:** What are these oral agents that you're talking about? Is this another form of chemotherapy or is it a supplement?

**GRIBBIN:** No, these are targeted agents. They may kill the blood vessels to the cancers or lower your white blood count. Examples include Glivec for kidney cancer and Sutent for breast cancer. These pills are often taken once a day for four to six weeks. There are probably 15 agents available now, and that number is growing.

**MODERATOR:** What's changing on the technology side of things? As we look at systems like PET scanners, CT scanners and MRIs, how will these be changing in the future? Obviously, we don't have very

many hospitals using proton therapy today. Will that change in the future?

**GRIBBIN:** Proton therapy centers cost between \$150 million to \$250 million. The current reimbursement system that permits that kind of investment won't last. Medicare will begin to question \$60,000 payments for four treatments.

Proton therapy today is not image guided, and that is a huge deficit compared with our other technologies. It creates a secondary radiation that delivers unnecessary and dangerous radiation to the rest of the body. People will eventually figure out how to reproduce these facilities in a less expensive way. I'll make a prediction that 10 years from now, a proton facility will cost \$15 million, and it will fit into one conventional linear accelerator vault.

**REPKA:** As for the other technologies, I believe we will see more advances, including PET scanners and CT scanners. They will be smaller than what we have today.

**GRIBBIN:** For us, it's no longer a question of what the scanner can handle; it's a question of whether our processes can move people onto the table and off of the table efficiently.

**KNEPPER:** We're seeing more enhanced technologies. One of the CT scanners that we looked at has a removable gantry table. You can wheel the patients up on their beds. You don't have to transfer the patient from one spot to another, get them situated and then take the scan. You can queue up three or four patients at a time.

**MORAN:** Of course, that raises some questions about preserving patient dignity. Now, instead of having patients placed in sub-waiting areas, they're sprawled out on a gurney in the hallway, waiting for the light to turn green.

**REPKA:** Still, if I ask my patient if they want to wait an hour and a half for an

MRI or do you want to sit next to someone for 10 minutes, they're going to opt for the latter. Time is important to them. When I get complaints from patients, it's mostly about wait times. It's rarely about the feeling that their privacy has been compromised. They don't complain about that, at least to me.

**KNEPPER:** Time is important to all of us. The common element among all cancer patients is none of them chose to be



**It's important on the privacy and safety side to consider the two-entry system.**

**Rebecca Lewis**

there. But since they do have to be there, they are as frugal with their time as they can be.

**MODERATOR:** Let's look a little bit further into infection control. It's a critical issue to any of these patients, probably even more so to the inpatient. What can be done from a design standpoint to enhance infection control and prevention efforts?

**GRIBBIN:** This was touched upon before, but one of the biggest issues is hand washing. We have sinks in the room, but if a

clinician comes in to wash his or her hands, it extends the patient encounter. In other words, if a physician hangs out in that room for one more minute, the patient is going to begin to ask questions.

**REPKA:** That's why the gels will help get more compliance with hand washing. You can sanitize your hands and walk away. I'm not happy with that behavior, but that's how it is today.

**LEWIS:** The architects in the room are familiar with the guidelines for health care design and construction. These guidelines contain a lot of good detail and information on infection control, including recommendations about water features and other types of aesthetic elements. The guidelines are a very important resource for people in regard to infection control.

**JACOBSON:** Private rooms play a role, as do the materials on the floor. It's good to involve the infection control officer at the institution. Design can impact some of the protocols the organization has in place. We need to make sure the space supports infection control practices.

**KNEPPER:** It's a little overwhelming. We build complex air systems, we can put UV lights in the airstream, and we can increase the airflow. But every infection control officer I speak with says it all comes down to hand washing. In a lot of places, we build sinks and place dispensers. It may increase the likelihood of hand washing.

**MODERATOR:** We've talked about delivery of care from a number of angles. What design elements are perhaps overlooked in terms of nursing efficiencies?

**BEMIS:** One thing we haven't touched on is ergonomics. The oncology nurse uses IV pumps a lot, for example. The placement of electrical outlets at a nice height is important so the nurse doesn't have to bend down to use them. The placement of supplies is another exam-

ple. Supplies should be easy to reach so the nurse doesn't have to stoop down to get something.

**ABRAMS:** We worked on a project that had three separate nurses' stations. It had a core work center and a pharmacy at the center as well. On some days, there were patients on only one side of the core and not the other. That gave the nurses a place to collaborate. We're working on a project now that provides designated, private workspace for nurses.

**BEMIS:** We have one large group room; that's where nurses go to make phone calls. The nurses prepare their meds and stuff in there so they're not out in the nurses' station trying to do all of that when there's people coming up and interrupting them. We created a space for that.

**MORAN:** This is an expensive option, but what about respite areas for staff. These clinicians are dealing with a load of sadness every day. They need a place to take a break.

**REPKA:** We cry in the back hallway.

**MODERATOR:** I read an article recently by an architect, and he talked about the need to create a sanctuary space for caregivers somewhere in the facility.

**BEMIS:** You create a space for the staff very similar to what you're going to create for the patient. The space needs natural light and positive distractions. It needs to be relaxing and calming.

**REPKA:** We don't have an area like that. That's why we cry in the back hallway. It's a tough sell to administration. There's no space.

**JACOBSON:** It needs to be part of the common vision that's developed in the beginning. You've got staff space, family space and patient space. Staff turnover is a lot more expensive than providing 120 square feet of space.

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**ABRAMS:** I've seen a shift in philosophy on this subject. The administrators are seeing the importance of retreats and sanctuaries.

**KNEPPER:** It goes back to what Steven just said. If the administrators recognize the costs to replace the staff, they will be more open to these features. If they can reduce turnover and reduce cost, we can

health care master planning and architecture in rural areas has brought a different perspective to national organizations. DSGW's involvement in national organizations is immensely important to what knowledge and expertise we are able to bring to our clients. We can speak to a hospital administrator from a very small town about a particular problem and offer a solution that we learned about in the national arena.

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get more staff amenities into these centers.

**MORAN:** When you factor in the nursing shortage and the aging population, administrators will come along and realize the importance of this for staff. We are also seeing a change in mindset among administrators. They see that these things can make a difference.

# thanks

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