

タイガープレイス：ペットと年齢を重ねていける素敵な場所

TigerPlace: A Unique Setting for Aging in Place with Companion Animals

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Thank you very much for the honor and privilege to speak to you today. I am deeply honored to have been invited to present here and to be in the company of such incredible leaders in veterinary medicine and in the pet product world. It's a special honor and I am very grateful, thank you.

It is my privilege to serve as the Director of the Research Center for Human Animal Interaction at the University of Missouri. And if you know the USA, you know that Missouri is right in the middle of the country. We call it the "Middle of Nowhere" [as a joke]. So we live in the middle of the country, the geographic epicenter.

Also I am a faculty member by appointment in both veterinary medicine and nursing. My nursing PhD is in Gerontology so my work focus is largely around the elderly, care of the elderly and ways to improve that. (Please note that I am running two computers here so that I can see my slides in English but you can see them in Japanese.)

It is an honor to serve as President of IAHAIO. IAHAIO is the International Association of Human Animal-Interaction Organizations. We are the global network of organizations doing work on human animal interaction. So it is a privilege to be here as President of this organization to see some of our member groups namely HARS and JAHA. We had a lovely dinner last night with some of our colleagues from JAHA, so it is an honor to be here to talk to you from the point of view of IAHAIO.

You can read from your handout some information

about IAHAIO which tells you where we were incorporated and our purposes. The purposes, broadly speaking, are to encourage research, education and practice in human animal interaction and to advance human animal interaction into new and exciting and unprecedented directions. We have a wonderful conference and our next conference is in 2013 and I will tell you about that shortly.

Since I became President 15 months ago we have completely renovated the IAHAIO website, I encourage you to go there and visit. We have done a complete strategic planning operation to review our goals and our mission and look at the projects that we are undertaking to move the organization and human animal interaction forward. We have restructured our membership categories to make IAHAIO more inclusive rather than exclusive. And we have created a new award called the "William F. McCulloch Award" that is going to be given out, for the very first time, at our conference in 2013. This award honors Bill McCulloch who is a veterinarian and who was initially working with Dr. Leo Bustad, Founder of the Human-Animal Bond. So we are going to honor Dr. McCulloch by giving someone an award in his name. It will be someone in the world who is doing wonderful education or practice work.

I am also pleased to announce that we have created a wonderful new collaboration with the American Veterinary Medication Association. So our conference in 2013 will be held in Chicago, my hometown, which is very exciting. And it will be in tandem together with the American Veterinary Medical Association's 100th convention. So this is the first time that IAHAIO has

united with the Medication Association. We are very excited about that. The new collaborations that will result from that will be really great. Because Veterinary Medicine understands human animal-interaction we are hoping that, for 2016, we can hold our conference in tandem with a human medical convention so that we begin to bring the fields together to consider 'one health, one medicine' and human animal interaction. So please come to Chicago July 20-22nd 2013.

We conducted a membership survey in 2011 and found that our members are very happy with our conferences. They were very pleased with the credibility associated with being a member of IAHAIO. So I invite you to encourage other organizations doing HAI work to join IAHAIO. There is great strength when we work together and there is credibility in IAHAIO.

So the conferences were viewed as very important for our members but they also asked us if we could create more ways for them to interact. So our new website has an area where members can interact together, talk to each other, share their projects, share their ideas and develop new projects.

This is our logic and in the USA we like logic models. The idea is that you have a strategy on the left side, you have your focus in the center and you have outcomes on the right side. What we want is down at the very bottom right hand corner, we want IAHAIO to be the source for human-animal interaction. In order to do that, we are going to do several things. We are going to actively recruit new members and we have been doing this. I have listed some here for you to see and, when we recruit new members, what we get over on the far side is more vitality, new ideas, and more exchange of information.

We are also going to raise corporate support for IAHAIO and we have started to do this. Pfizer is helping to fund the William F. McCulloch Award and we are working with the Human-Animal Bond Research Institute (HABRI Foundation) that was formed in 2010 by the American Pet Products Association. We are working with them on a project called 'HABRI

Central' which is going to be an online repository of all literature published and unpublished about human-animal interaction. Presently the literature is scattered over different places but this project is going to bring access to all of that literature in one place on the web, a place that is new improved and very exciting. I believe it will be open on March 1st. So, on the far side we expect to gain more fiscal help for IAHAIO as we engage with more corporate partners.

Also, we are going to engage our members. We have already done so by expanding the website and we are also going to start a database project where people groups doing animal assisted activity will be working together to collect clinical data and outcome data showing the outcomes of visits. Up until now, we can say all we want about "how nice it is to do animal assisted activity visits" but, until we show actual outcome data, nobody within the scientific disciplines is really going to believe us. They just say "that's just nice, but we want to see scientific data!" So we will be creating a research source and a network and eventually we will be down here in the far right hand corner where IAHAIO is the source. So for our future we are growing our membership, we are creating new partnerships and we are going to move the field forward in unprecedented and highly exciting ways.

But now back to Missouri, the middle of the country, 'the middle of nowhere'. I bring greetings. Our vet school there has over 400 veterinary medical students and we have a four year curriculum for them. Our nursing school has close to 500 Baccalaureate Degree nursing students, approximately 200 Masters degree students and approximately 50 PhD nursing students. So we are fairly large for the State.

The University of Missouri is a land-grant mission university. It was founded on the principles of one of our presidents, namely Thomas Jefferson who was a very strong educator. So we were the first university created in 1839 that was with the new property purchased by the United States from Mexico, under the so-called 'Louisiana Purchase'. (I wonder if there are any US history experts among you who know about the

'Louisiana Purchase'?)

So we are charged with the responsibility of providing a comprehensive education to the citizens of our state. We also have many people who come from outside of the state to be educated at our university. I will tell you about the research at the School of Nursing because it's very exciting. We rank number 15 out of more than 300 US schools of nursing in terms of the amount of NIH research grant funding we receive.

Why the Tiger? (Is anybody here born under the sign of the Tiger or the Chinese year of the Tiger? - I myself was born in the year of the Monkey - Oh good, one person here was born in the Year of the Tiger.) In the United States our culture can be very strange and one of the things we like is to have a mascot, for everything. We have a mascot for sports teams and a mascot for universities. The Tiger is the mascot for the University of Missouri. Of course, there have never been any Tigers in Missouri except in the Zoo, so I have no idea why they chose the Tiger, except that it is a powerful, wonderful, grand animal. The founders probably wanted the university to be powerful, wonderful and grand which it is. So the Tiger is our mascot and his name is Truman.

Do any of you remember President Harry Truman? May I say this very sheepishly but he was the one who did something very bad to Nagasaki and Hiroshima. He was born in Missouri and is respected for becoming President that for being the only President that ever came from Missouri. So Truman is the name of the Tiger, our mascot. And everything at University of Missouri is the Tiger. So TigerPlace is named because of that. You see Truman here? He is at a sports game, the lower right hand corner is an [American] football game. 60,000 people have come to watch football - indeed it is almost a form of insanity in our country. (As you can probably tell, I am not a sports fanatic).

But why do we have a center on human animal interaction at the University of Missouri? The university is a 4 campus system and the four campuses as a whole are called the University of Missouri, or MU (Missouri

University). Here is a photo of my husband and my puppy...I think they are both kind of cute so you have to look at them. Sorry, but this is my chance to have my family with me !

So why do we have a center at MU? We have this human animal interaction center because of the concept of "one health, one medicine". The health of animals and the health of people are not separate, they are linked. Indeed, they are dependent on each other so we cannot study them in isolation of each other. So we believe in one health, one medicine and in this respects we are one of only five universities in the USA that have all of these disciplines. We are one of only five to have veterinary medicine, medicine, nursing, physical therapy, occupational therapy, law, and journalism. So it is logical that we would have my center, which I started in 2005. Our mission is pure and simple - we want to study and promote the health benefits of humans and animals interacting. That's what we are about.

So this slide shows our objectives. I won't read them all to you but we conduct research, and provide education opportunities. In fact we have provided an education opportunity to a colleague sitting right here, namely Hamano-sensei who came and worked with us for 6 months, yes. This slide shows some of the programs but I am not going to go into a lot of detail on these but I would like you to read them. We do a wide range of studies and programs in the community that show just how beneficial it can be when you get people and animals doing healthy things together, how it helps the health of both ends of the leash. Of course, I am only speaking about companion animals. Here you can read the titles of our projects which I will show you briefly in the interest of time. You can see that we are a busy moving place with a lot going on. I am sure Dr. Hamano agrees that we are a busy moving place.

So TigerPlace is what we are really here to talk about. TigerPlace was an innovation that has grown out of needs. In the United States we expect that, by the year 2030, over 30% of the U.S. population will be over 65 years of age. And I am told that in Japan you

also have a rapidly increasing demographic group of older adults. So we must do something to effectively address the needs of that population group. TigerPlace arose out of an awareness of that need. Older adults sometimes need more help and care and support as they age. In our culture, we call them "senior citizens" or "seniors" for short. Seniors want to be active. They want to try and remain as healthy as possible for as long as possible, remaining as independent as they can be for as long as they can and not to be dependent on their children. That is our culture. We are a very individualistic culture, we don't have too much in the way of filial piety that you have in Japan. Our people don't want to do be a burden to their children.

So the typical way that people age in the States is that they live in their own house and then they move into some supportive senior housing. After that they go into what we call 'assisted living' where more care is given to them. From there they go into what we call a 'nursing home', (I think here you call it a nursery home). Then they go to the hospital and die in the hospital. This has been the trajectory of aging in our country for a long time, but we now have [even greater] culture change. [More] young adults are moving away from their older adults so we don't have multigenerational families living together any more. Things are now far more individualistic. Everybody is busy working and we have very few people available to take care of their elderly family members. So we need a different model for providing this care.

Some of my own research on the relocation of older people has shown that when you start moving people again and again as they come to need more care the outcomes are negative on their health. They become depressed, they have falls and they develop incontinence. They suffer all kinds of problems with this constant moving. We are better off keeping them in their home as long as possible.

So our vision for TigerPlace was to have a place where older adults could age with dignity and have supportive services and nursing care added as they come to need it. This way they do not have to move to another place,

not even to another part of the building to get more care. They move into TigerPlace one time only and stay in their apartment until they pass away with additional care added as they come to need it. In my world this also means having their dog or cat on their bed with them.

So the whole foundation of ageing in places is based on careful nurse coordination of the care, prevention activities and early assessment of problems before they become major problems. It is about getting the care and support that people need and helping people to keep their pets. We want to have people healthier for longer and with their pets. We want to avoid all these expensive costs of moving into a nursing home where they soon become depressed and ill, and unable to have a healthy or dignified life.

So the School of Nursing engaged with a company called Americare. Americare had been providing nursing care to people for 22 years when they joined us. They built the building at a cost of \$30 million. They not only built it for us but they maintain and run the building. This is a picture of TigerPlace seen from the front with a tiger tail everywhere as you can see. It's always a tiger tail - we Americans are just so silly !

So we started with 31 apartments and these immediately became full. So they built the second part of the building called Tiger2 with 23 apartments. That also was immediately filled so now they have built Tiger3, which just opened in July. That has many more (although I do not recall the exact numbers) but it is rapidly expanding. So the idea was to create a building so that it can accommodate all the care that anybody might ever need, right in their own apartment.

This was the first advertisement for TigerPlace, based on fun. This is a positive model, "move from your home to TigerPlace", "come live at TigerPlace - it's a fun place, shake, rattle and roll". "We want you to be happy, healthy, and have your pets". "If you don't have a pet we will help you get one. So come live with us". And people do! There is a long waiting list of people wanting to get into TigerPlace.

These are all the schools and colleges at MU that are joined in the project. You can see that many are involved. We have the School of Architecture involved in helping to design the building, we have the School of Horticulture that planned all the gardens and did all the landscaping. We were all working together. It was a beautiful thing.

These are the list of general services people automatically receive when they move into TigerPlace. There is a 'Concierge Service' to drive you where you need to go. They will take you to your appointments, take you to the doctor or take you shopping. They will even go to the casino too, (a lot of TigerPlace residents like to gamble so they go to gamble). All the apartments have internet access and computers. There is restaurant style dining with executive chefs. We have hired executive chefs so you can choose what you want to eat. So people don't all have to eat the same thing at the same time. Individualized life is what we are about.

We also provide access to the university because TigerPlace is a university project. TigerPlace residents are brought to the football games, they come to the concerts and they come to the theatrical performances and to art exhibitions on campus. They don't have to take care of their home as it is all done for them. These are the services that are provided. The nurses make four in-home visits. If you are healthy you don't even need an in-home visit so you don't get one. You just get what you need. We provide personal care if someone needs help with bathing or with getting their hair done or with light housekeeping. It is all provided. If people need help to remember to take their medications, we provide it. And we watch out for problems early.

So aging in place involves an RN, or 'Registered Nurse', a Baccalaureate prepared nurse who serves as a care-coordinator, and a veterinarian to identify problems in TigerPlace pets. We have 17 pets that reside at TigerPlace and the pets are also aging in place. Older people have older pets, and they too need a little care and a little help. So we follow everyone to make sure they can stay in their home, in their apartment and have the services they need. We also conduct health

promotion activities - influenza shots are given and we teach about how to stay healthy.

So here's the point. The standard way that people age and die is that they have a continuous decline, and usually the declines are pretty large in function. The person may fall down and break their hip which causes a major decline in function. That can often create some cognitive decline in their ability to think clearly. So people keep having these declines and then they end up in the hospital and die. We don't want that. That is not a dignified or healthy way to age. We want the model that TigerPlace provides. We want people to be on a long plateau. They may have a slight decline but then resume with a long plateau again. Then there may be slight decline again, and then they die. Some might just lie down on their bed with their dog beside them and slip off into heaven. This is the goal. It is a more dignified approach - focusing on health, preventing illness, preventing problems, maximizing wellness and helping people to stay active until they die.

This slide shows the front of TigerPlace. Here is a view of the front door. You will see that there are no steps at TigerPlace - it's all on one level. No one needs to fall up or down steps. Of course the part that is the most important to me is the pet friendly construction. I was heavily involved in the design of this building. All of the apartments have screened-in porches. This is a little room which is outside of their door with screens to keep the bugs out and the pets in. The cat can be outside in the screened-in porch, enjoying and watching the birds. The dog can be out there or the older person can be out there, and can then go outside. The whole building is built around a square. In the center is a beautiful courtyard so the dogs can go out into the courtyard but remaining contained while enjoying life with their older person.

The window sills are wide so that cats can watch the birds out of the windows. There is a tile floor just inside the door so that when dogs come inside with muddy feet they don't make a mess. And there are walk trails all the way around the complex because we do want to encourage people to walk.

These are some of the common spaces. You can see views of the dining rooms. These are the columns which are much like the columns we have on campus. We wanted to be connected to campus, conceptually. So these are the dining rooms where the residents have their lunch and dinner. They usually have their breakfast in their own apartment. This is the lobby, a sitting area where they can meet family and where they can sit. There is an area next to it where there is a pool table – indeed, there are extremely keen pool players at TigerPlace who take it very seriously.

There is also a sports bar. (It is named after the Bengal Lair tiger den - another silly Americanism). It's a sports bar where happy hour is held everyday at 5 o'clock where residents can come out for drinks and watch sports games on big screen TV.

There is a walk-in swimming pool that also has a lifting device for people unable to walk into the pool. And we have a theater where movies are regularly shown and people from the university give presentations there. And of course there is a beauty shop where everybody gets their hair done. This is a view of the exercise room, and the library. It is all pretty nice !

Here is 'Tiger Total Fitness' where the focus is on physical activity and remaining active - keeping walking, doing exercises etc. There is a dance class, a Tai Chi class, a Yoga class - all kinds of exercise. There are group activities as well as individual training for people to stay healthy. So if we have someone who has come back from the hospital after some kind of catastrophic health event we will develop an individual program for them to return to physical fitness again. Here again is a view of the outside. You can see the screened-in porches I was talking about, and the walk trail going all the way around.

Within TigerPlace there are three types of apartment. One is what we call the 'Efficiency' type. This is essentially one big room that the resident lives in. The kitchen is on one wall, the bed on another wall and the living space is in between. Maybe some of you know about that type of apartment. Then there are the 'one

bedroom apartments' with a separate bedroom, living space, kitchen and bathroom. Thirdly, there are the 'two-bedroom apartments'. We have one lady who got herself two of these two-bedroom apartments so she has a 3000 square-foot living space at TigerPlace. That is very big! People pay rent on a monthly basis which includes all of the services I told you about, two meals a day, laundry and a kitchen. Here is an example of the living space in the apartments, the small kitchen.

And now I will tell you about our 'TigerPlace Pet Initiative' which is what I think sets TigerPlace incredibly apart from any other place in the world. Not only do we allow pets but we encourage pets. The mission and goals of the TigerPlace Pet Initiative, or "TiPPI", are to help people stay engaged with their companion animals and to provide good care for the companion animals also. As I said before, this is because the animals are aging too. We also carry out research on the benefits of owning a pet and we provide foster care and adoption services if a resident has to go into hospital. We will take care of their pet while they are there and if they pass away before their pet passes away - a really major concern for older people - we will take care of their pet and find it a new owner.

So here are the rules. There can only be two pets in each apartment. The pets can enter all the common spaces but they have to be on a lead. (We have a security deposit in case a pet causes some damage to the building). Whenever a new pet moves in we make an assessment of the animal. We make sure it has had vaccinations, we look at its behavior and we check to see if there are any health issues that may need attending to. We keep records about the health issues in our own veterinary medical exam room which is right inside the building. We keep track of all the vaccinations for all the animals. This slide shows the examination room, and this is our exam table. The reason we do all this is not because we think it is fun or nice. It is based on science which clearly supports the fact that older people benefit from being with, living with, owning and aging with companion animals.

We know that pets give their love unconditionally.

In our society, in the US, when you are no longer an income producer you are not valued as much as the younger people who are making money in the system. But pets are unconditional with their love. They don't care if you are making money or not. They don't care if you walk with a cane, they just love you. Older people need this unconditional love as they face all the little declines in their health. They need their pets in order to have a reason to get up in the morning. Pets for older people are viewed as an individual member of the family, not as something they own or an object. And they certainly do inspire fun. Older people need to have a reason to have fun. Fun is important, we have to laugh. People who end up in nursing homes have fewer and fewer opportunities to laugh or have fun. They need to feel the beneficial neuro-chemicals that occur when they interact with a companion animal.

Here is an example. People out walking with a dog are much more likely to have some interaction with another person - whether that person be a friend, an acquaintance or a stranger - than people who are not walking with a dog. We know that when you walk in the presence of a dog you get more attention, positive attention. Older people need positive attention, we all do.

So here are some of the psychological benefits. Older pet owners in particular are less likely to become depressed. They have someone else to think about besides their own aches and pains and what's happening to them. They are thinking about their animal and they have better morale. Morale is a very important thing for older people. Do you know what I mean when I say morale? Who can speak English and tell me what I mean? Thomas I will pick on you, what's morale?

Audience (Thomas): Morale means feeling positive, optimistic.

Rebecca Johnson: Perfect, he is an A+ student! Yes, morale is about a positive, optimistic outlook. We want older people to have a positive, optimistic outlook. They should not be thinking "oh, I am dying everyday" or "I'm

in pain, I hurt, no one loves me and I'm all alone in this world". We want them to be more positive, thinking things such as "I'm doing the best I can, I do have some pains but it's not too bad. I have my companion animal who loves me, someone for me to focus on and not just my pain". Having a more positive morale means that the older person will be more engaged with the world and less isolated. Not just staying at home, sitting, watching TV, feeling bad and getting more and more depressed. If we can improve morale, then older people will remain happier and they will remain more active. When they are more active, they will stay physically healthier and be more active.

I have probably over-emphasized that point but here is some research data that's very interesting. I will just explain what this chart means. These two columns [on the right] show that when animal assisted therapy was given to older adults, there was significantly less loneliness. When people get to interact with an older adult or with an animal they don't feel so lonely. There are physical benefits and all the photos you see here were ones I took here in Japan on my last visit. When I see older people with pets here all the time I think it is wonderful. I want to run up to them and give them a big hug (although they would probably think I am crazy). Older people who own pets are more likely to exercise because they walk more. If they have a dog it needs to have a walk. They are going to give it a walk because they are committed to taking care of their animal. So it is good for both ends of the leash. Older adults who owned a pet, walked longer and had much better, what we call 'lipid profiles', in their blood. I am talking about cholesterol. You know about good and bad cholesterol and triglycerides. Lab values are consistent across several studies that, if you have a pet, your risk factors for cardiovascular disease decrease. And if you do have a heart attack, or you have bad genes, you are more likely to survive the heart attack one year later if you have a pet. This is science, not 'fluffy' superstition.

To continue talking about cholesterol levels, our colleagues here in Japan, namely Motooka, Koike, Yokoyama and Kennedy, did a very interesting thing. They studied older adults walking with Cavalier King

Charles Spaniels and measured the High Frequency Power Heart Rate. This refers to the heart rate showing periods of rest between beats in the heart. We need good periods of rest between beats because without them the heart will wear out quicker. So we want this rate to be high. When people were walking alone they measured 60 Hz, as shown at this level. But when they walked with the dog, there were significantly better periods of rest between the heart beats than without the dog. Next they measured the same thing for 3 days to see what would happen. Again the white bars on the chart are the measures 'without the dog', the green bars are measures 'with the dog'. What they found was that, after the first day, the benefits were cumulative. So there was even more benefit on day 3 than on day 2. I am eager for them to repeat this study and extend it even longer. Let's see how far we can go to increase these benefits. I am getting old myself so I want to know the results pretty soon!

So I will return to talking about TigerPlace. We are based on science not fluffiness. We have our own veterinary medical exam room, as I mentioned. A veterinarian comes once a month and visits all 17 of the pets. I have to say that when we first started this service the old ladies thought it was very amusing that a vet would come to their home to see their cat or dog, while their own doctor would not make home visits. Nowadays in the USA there are no house calls anymore for human medicine. When we asked our human medical colleagues to keep an examination room at TigerPlace and to come and make house calls they responded that the residents were welcome to come to their clinics. In other words, they said "no"!

So we have a veterinarian who makes house calls and we have hired pet care assistants because, as old pets grow older they develop little problems and need help. For example, older people cannot see the tiny numbers on the tiny syringe to be able to draw up insulin for their pet. If any of you veterinarians ever send an older person away with instructions to administer insulin twice a day I feel I should scold you because they cannot necessarily see well enough to do this. They need some help. So our pet care assistants perform

whatever help is needed - they give eye drops, they give animals their medications, and they check on them three times a week.

Then we have a program called 'PAWSitive Visits' where we bring animals to the facility. It is not enough for residents to only have their own pet - we want them to see other animals too. So the animals arrive and we hold a session and bring in the animals. (I am going to show you this shortly). Then we have a fund that enables us to take care of the pets whose owners die. Sometimes a pet lives longer than its owner which is obviously a reality with older people, but that fact should not keep these people from having a pet. We should be able to provide help in these situations and we do. And then, very gratefully, we have the HILLS feeding program where we are able to provide wonderful food for the pets at a very low price to help out the older people who only need that kind of help.

So we have in-house pet medical care. This slide shows our veterinarian Dr. Jim Creed, and this is our exam room. You can see the pet food on the side. Dr. Creed takes any animal that needs treatment to the exam room to carry out small procedures. I should also note that we are not taking business away from the local veterinarians because what we are doing is 'case finding'. Dr. Creed identifies the problems in the pets and tells the older person that their dog needs to see a veterinarian. If they don't have their own veterinarian in the community then we take them to the Vet School. So we are not taking business away from veterinarians because we are finding cases earlier than an older person would detect by themselves if they didn't have our veterinarian visiting their pets.

This is a good learning experience for students. We have vet students who are gaining an opportunity to work with older people and old pets. Here is Dr. Creed visiting some of the pets. Making house calls, he talks to the owner, asks how the pet has been eating, has the pet been going to the bathroom, does the pet seem well and regular or is there something different? He is carrying out a little history taking.

We also want our people in TigerPlace to learn. Dr. Creed gives classes about flea and tick prevention. He gives classes about how to recognize diabetes in cats or renal failure. He is teaching the residents of TigerPlace how to know a problem before it happens if their animal is in trouble. Together, working with our pet care assistants, we know that we will detect problems earlier.

By the way, if we identify behavior problems we also work with them. You know about Miniature Dachshunds already. They have quite a personality. Well, one little doxie suddenly started biting people. When the caregiver would come into the owner's apartment or leave out of the door the doxie would run up quickly and try to bite the visitor's foot. I wonder if any of you have ever seen a doxie do that? Nobody? (Well I guess there are only good doxies in Japan !)

This particular doxie's name was Shadow and his owner was able to have this problem corrected. Now, Shadow is contained whenever anybody is ready to leave. We don't want people getting bitten as they walk out of apartment doors. So we work with behavior issues as they arise.

The pet care assistants visit three times a week and they check on the supply of food, to be sure the animal has food. They check the water bowl, they clean the cat boxes and they do what is needed, and will also carry in the bags of dog food. These are heavy and hard to carry so older people just need a little help. It is inhumane to tell an older person that "you can't take care of your pet, so get rid of it". I mean that it is inhumane to the person because it could cause their health to seriously decline. And it is also inhumane to the animal to take it away from its loving owner. We only need to provide a little help. The pet care assistants not only help the veterinarian, they will also walk the dog if the older person is having a bad day and doesn't feel up to walking. They will walk the dogs and give medications. In this top picture, the assistant is giving eye drops. The older lady shown here is not able to see well enough to put the eye drops in their dog's eye. So twice a day the assistant is giving eye drops.

Here is case study 1, about successful pet ownership at TigerPlace. We had this lady who is 96 years old. That is very old and she was in really good health (I have a picture of her here at the end) but she had a 28 year old cat. That too is very old for a cat, I am sure you veterinarians agree. The lady had had the cat since it was a kitten, 28 years before. My pet care assistant went in and asked "where is Cleo, the cat?" The old lady answered with "I know she is not feeling well, there is something wrong with her". The pet care assistant went in and found Cleo looking terrible, drooling and looking as if she was at death's door. So the veterinarian examined Cleo and found that, at 28, this cat had developed diabetes. The vet prescribed insulin and my pet care assistant now goes twice a day, morning and night, to give the insulin. The cat suddenly went into remission. No more diabetes, no more need for insulin and now the cat is running around like a kitten again. It is like magic. I don't understand how that is possible but it is a wonderful thing that happened. The old lady said to me that "Cleo is the reason I get up in the morning". Why would we ever think to take a cat away from a lady who says that? We would not.

Here is Case Study 2. We had an 85 year old lady who owned a 12 year old Shih Tzu called 'Rags'. All of a sudden Rags' eyes turned red. The veterinarian took a look and prescribed eye drops. But the lady herself was not capable of giving eye drops to Rags. She cannot see well enough to apply the drops and hold him at the same time. So our pet care assistant goes twice a day, gives him the drops and the problem has been resolved.

Then we have the 'PAWSitive visits". This is a weekly program where we take a variety of animals to TigerPlace for an hour long session. Older adults get to interact with the animals. From the photos you can see that we don't just have small animals. These large ones are Missouri Mules. They are mules developed in Missouri and unique to Missouri. These two shown here, Tim and Terry, are mascots of the Vet School. Yes we have mule mascots too! We also had a horse come visit and an Alpaca [similar to a llama]. We have seen a pot-belly pig and a whole range of dogs and cats. When the animals visit, the attending students

prepare a tutorial about the particular animal and give a little class. A lively discussion usually follows. Do you know what older people do best? They talk about the past. If you believe in Erickson you know that there is a developmental stage at each stage in life, and there are certain tasks that a person has to work through at each stage in life. The developmental task for older people is life review. They are trying to come to closure and to find acceptance of themselves and, in order to do that, they talk about the past. They tell the same old story again, again and again. They think it through and consider it and come to self-acceptance so that they are ready to go to heaven. We want people to go to heaven feeling good. So during this PAWSitive class people start to talk about whatever animal they had. Many of the older men had their own horses or they had mules. Some worked on the farm and many of the older ladies had cats. They talk about the animals they had when they were children and they work through their life task.

This slide is about "Bereaved Pets Endowment". We have a very generous donor who feels very strongly that, if a person dies before their pet, that pet should be cared for. So she gave us money to start this fund. By the way the photo shows Cleo the cat and elderly lady I spoke about before. They were interviewed by the USA Today newspaper. "It is very exciting", she said, "I have never been in a newspaper before". Her family also came along and they were all very excited about the interview. Anyway, the idea of this endowment fund is to have money to pay for care of a pet whose owner passes away. What we do is to provide foster care in-house. Another resident might say, "I will take care of Cleo when Mrs. X dies". We then give that resident a little funding to help pay for the care of Cleo the cat. We have had two people die before their pet in TigerPlace. Another said "I want Hercules to be my dog", which led to Hercules eventually being adopted by another resident of TigerPlace who didn't have a pet. This is because all the residents know all the animals. It is something positive that other residents want to adopt a pet whose owner passes away.

The HILLS Feeding Program is provided through the

College of Veterinary Medicine, HILLS provides food so that we can sell it at a low cost to the residents. Look at the pure joy on this woman's face. You can see that TigerPlace has some wonderful outcomes for older adults in terms of their health. We are preventing nursing home placement and this has been very successful. We are therefore saving a lot of money to the healthcare system in terms of the costs incurred by people going into these very expensive nursing homes. They stay in their apartment at TigerPlace without such terrible costs.

The nurse care coordination helps to find problems very early on so that they don't become catastrophic. That prevents healthcare dollars having to be spent on larger problems. Those are much more expensive to address than meeting the smaller changes along the way.

There are some other very exciting projects at TigerPlace. I am not going to go into detail about them because of the time I have but you will remember that I mentioned all of those other colleges at the university. One of the colleges involved in our project is the School of Engineering. They are developing all kinds of sensors and technology to help predict problems in older people before they occur. So I am just going to skim this topic... If a resident agrees to participate in the project some sensors are installed in various places within their apartment to monitor their walking and activity. We know that activity patterns changes can be an indicator of a healthcare problem or an impending healthcare problem.

So in this image you can see some sensors. There are little motion detectors in various places and there is a bed-located sensor that is a motion detector. Restless sleep is a precursor to some very catastrophic health problems in older people, depression and also stroke or heart failure.

So here is an example of an apartment. This is a one bedroom apartment with the screened-in porch, a living room, dining area, little kitchen, and bathroom with walk-in shower and closet. The sensors are indicated

by the blue lines and they are able to detect motion patterns. The sensor data is compiled into graphs, as shown here, and from these we can understand changes in an individual's activity.

Here is an example chart. The black data indicates when someone has left their apartment to go outside. The large white space shows night time with nothing going on because the person is asleep. Then they start to get up, become busy, move around and then they have gone out of their apartment. This example is a very active person, in and out of their apartment all the time.

This is data for the sensor in the bathroom which detects them going in and out. It shows the days of the month and you can see the days and hours when the individual never went into the bathroom at all during the night. However the right hand side data shows them beginning to habitually visit the bathroom at night. From this data we know in a timely fashion that the person is starting to visit the bathroom and the system sends some alerts to the nursing staff about increased restlessness in bed at night. This tells us that we ought to be paying attention.

So in this case study the person started going into the bathroom more. There were two alerts so the nurses checked it out. The resident was referred to a physician who found that the person had a urinary track infection. These can be very problematic for older people and must be treated right away otherwise it can become septic. Fortunately, this person was put on antibiotics early and was fine.

We also have NIH funding for the research at TigerPlace. We found that there are statistically significant differences between the control group and the test group in measuring some of these parameters. What we measuring is the left hand grip strength and gait. Here, again, is an example of bed sensing data, in this case heart rate data. The bed sensor actually measures heart rate and this shows the incidence of Bradycardia when the heart beats or pulses less than 30 beats per minute. That is potentially a very dangerous

situation in the elderly, even when sleeping. This person had a reasonably normal rate for quite a while but suddenly there was a slowing of the heart rate. This data shows normal activity, and during sleeping when there is some restlessness. It is not too bad but then, suddenly, their heart rate dips and they are not moving. But this person was able to get care immediately. There is now also a proposal pending with General Electric to use 'passive sensing'. GE is developing a carpet product called a 'Smart Carpet' that can measure stride length, walking speed and the gait stability.

Here is another example of a bed sensor. This one goes under the mattress and detects changes in restlessness and sleep. There is a also another new project for detecting falls and I will show you that briefly. This system uses radar so there is small radar device inside of this box. The radar measures people's behavior patterns within their apartment. In the photo you can see that a computer is located above the refrigerators, well out of the way. This is the data it creates. The radar senses the person's walking patterns and produces a silhouette image with a map of their footsteps. We can tell their walking speed and step length which, if they change, may suggest a problem is going to happen.

It is very impressive don't you think? The older adults think it is very cool and are responsive to having all these sensors around them. They like the idea and feel safe knowing that someone is keeping a track of their progress. They do not feel that it is a violation of their privacy because all the information is kept confidential.

Here are my conclusions about the pet projects. In short, older adults love having their pets around them. The number one reason that people want to enter TigerPlace is because they know they can have their pet and receive help keeping it. Out in the community they would be on their own and eventually somebody will tell them to get rid of their pet if they cannot take care of it. That does not happen at TigerPlace where things are more humane.

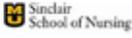
So we want everybody at TigerPlace to age in place, both pets and people. Here is where you can find some

more information and now I would be happy to take questions.



TigerPlace: A Unique Setting for Aging in Place with Companion Animals

REBECCA A. JOHNSON, PHD, RN, FAAN
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 University of Missouri, Sinclair School of Nursing
 Director,
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【Slide1】

Membership Survey 2011

- Reputation of IAHAIO highly rated
- Triennial Conferences highly rated
- Networking opportunities highly rated
- Awards highly rated
- Requests:
 - Medium for better connecting members
 - Better dissemination of information about members' work
 - Increase collaborative opportunities
 - Open membership opportunities

【Slide5】

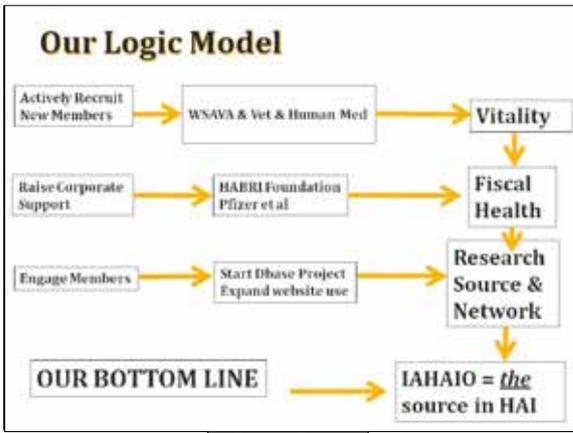


As President of IAHAIO, it is a privilege to be here and speak to you.

I am thrilled to be able to meet with some from our IAHAIO member groups:

- Japanese Animal Hospital Association (JAHA)
- Society for the Study of Human Animal Relations (HARS)

【Slide2】



【Slide6】

IAHAIO's Incorporation & Purposes

Incorporated as a 5019(c)(3) 1992 in State of Washington, U.S.
 Presently 31 Member Organizations doing HAI work globally

Purposes:

- Provide a forum for ideas and information among multi-national organizations concerned with the study and promotion of the mutual welfare of people and animals in their environment
- Promote new research, educational and practical developments in HAI including giving international awards
- Support, facilitate and organize international meetings on the scientific, educational and practical aspects of HAI.
- Promote publication of literature supporting IAHAIO's aims and activities.

【Slide3】

IAHAIO's Future

- Growing membership now over 46 organizations globally
- Creating new partnerships in veterinary and human medical fields
- Moving HAI field forward with innovative projects

【Slide7】

IAHAIO Today and Tomorrow

- Completely renovated website
- Strategic Planning
- Surveyed our membership
- Restructured membership categories
- William F. McCulloch Award for Excellence in HAI Practice/Education
- New collaboration with AVMA
- IAHAIO 2013: Chicago, IL, USA

【Slide4】



Now, I bring Greetings from Missouri!



【Slide8】

Land-Grant Mission Founded 1839

- First University in T.J.'s "Louisiana Purchase"
- Educating citizens/students of MO
 - providing well-rounded education of students in all disciplines and particularly the SSON to offset nursing shortages
 - teaching students in other disciplines about geriatric issues
- Research at SSON
 - 15th out of over 300 schools in U.S. in National Institutes of Health grants
 - focus is geriatric research



Thomas Jefferson



【Slide9】

ReCHAI's Objectives

- Fund preliminary HAI research
- Implement HAI studies & programs
- Disseminate HAI information
- Offer conferences on HAI
- Educate students & the public

【Slide13】



MU=Land of the Tiger

- University Mascot = "Truman" the Tiger named after U.S. President Truman



【Slide10】

ReCHAI Programs

Walk-A-Hound, Lose a Pound- A community dog walking program to increase citizens' physical activity by walking shelter dogs.

Human-Companion Animal Interaction Course- UG & Graduate course exploring historical & theoretical bases of HAI, the nature, issues, & clinical applications of HAI & AAT.

PALS for Seniors- A statewide animal assisted training, certification & implementation program.

【Slide14】

Why a Center on HAI at MU?



One Health, One Medicine: Only 5 U.S. universities have Vet Med, Med, & Nursing on same campus

【Slide11】

ReCHAI Programs & Studies

TigerPlace Pet Initiative (TiPPI)- A pet-encouraging retirement residence with a fully equipped veterinary medical exam room. CVM students learning to work with older adult clients & their pets. Also includes an AAA program.

Pet Pals Study- Studied effects of dog visits on loneliness in newly admitted nursing home residents.

N. American VMTH ICU Visitation Policies Study- Studied policies and challenges of owner visits with pets in ICU.

Veterans and Shelter Dogs Study- US military veterans returned from Iraq and Afghanistan train shelter dogs to alleviate their own Post Traumatic Stress Disorder.

【Slide15】

ReCHAI's Mission:

"Studying & promoting the health benefits of human-animal interaction (HAI)"

Established, 2005



【Slide12】

ReCHAI Studies

Hand and Paw Study- Studied cancer patients visiting with therapy dogs while awaiting daily radiation therapy sessions.

Pet-A-Pet Study- Studied serum neurohormone changes in humans and dogs after a brief quiet human-dog or human robotic dog interaction.

Dog Walk Program- Studied effect on weight loss and exercise compliance in adults who regularly walked with "loaner" dogs and a handler.

Owner perceptions of visiting their dogs in VMTH ICU - Described owners' visit beliefs & experiences.

【Slide16】

TigerPlace: Innovation out of Need

- The population over age 65 is the fastest growing sub-group in the U.S.
- Older adults require advancing levels of support to remain independent as they age.
- Today's "Seniors" want to remain active and not to rely on their children.

【Slide17】

Our Goals for TigerPlace Residents

- Stay healthier and active longer
- Keep their pets
- Avoid expensive and debilitating hospitalizations
- Avoid relocation to a nursing home
- Engage in life and active living through the end of life

【Slide21】

Typical U. S. Trajectory of Aging

- Own Home ⇄ Senior Housing with services ⇄ Assisted Living ⇄ Nursing Home ⇄ Hospital
- Recent culture changes
 - Mobile society
 - Families working
 - Increased individualism
 - Less family care of older adult members
- Research shows as seniors move from place to place for more care:
 - Depression occurs
 - Short-term memory decreases
 - Reported pain increases

【Slide18】



Americare Systems, Inc.

- Fall 1999, the SSON entered into partnership with Americare
- Americare
 - 22-year history in the assisted living and skilled nursing facility business
 - Named one of the top 50 providers in the United States
 - TigerPlace landlord

【Slide22】

Our Vision: "Aging in Place"

- A facility that allows older adults to grow old with dignity; without having to move as their care needs increase
- A home where older adults can bring their pets to live with them
- A place where they can maintain their independent lifestyle
- A national model of excellence, drastically changing the way long-term care is provided in the U.S.

【Slide19】

INDEPENDENT LIVING BY AMERICARE™ & THE SINCLAIR SCHOOL OF NURSING
TigerPlace™



Enabled by legislation 1999 and 2001
 31 apartments opened 2004, 23 more in 2009-fully occupied
 Designed to promote independence and aging in place with companion animals co-residing
 Built to nursing home standards but operated as independent living with services, can live in apartment through end of life
 2011 opening: 85 (mostly private rooms) skilled rehabilitation

【Slide23】

Aging In Place Foundation

- RN Care Coordination/Community Case Management
- Getting people the right services at the right time to maximize regaining or maintaining health and independence
- Encourage and support pet ownership
- Provide research and education opportunities

【Slide20】

Initial Advertisement for TigerPlace

Shake, rattle and roll.



There's more to retirement than being at TigerPlace, a full-service living community including TigerCare, which helps you manage life's challenges by delivering services where you need them - in your own apartment. Under construction near the University of Missouri, TigerPlace promises active lifestyle and superior service. To find out more, call toll-free 866.257.7661. TigerPlace. Where you can get retirement by the tail.

Opens Spring 2011

TigerPlace

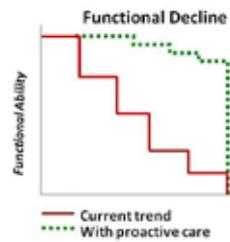
【Slide24】

Collaborating MU Schools & Colleges

- College of Veterinary Medicine
- College of Engineering
- School of Business
- College of Human Environmental Sciences
- School of Medicine
- School of Health Professions
- College of Education
- College of Arts and Science

【Slide25】

Squaring the Life Curve of Seniors



Reduce functional decline by

- Facilitating social support & pet ownership
- Assessing behavior patterns
- Assessing gait & activity level
- Recognizing pattern changes
- Detecting early signs of health decline (so can intervene before things become major events)
- Detecting falls
- Informing RN Care Coordination

Rantz, Marek, And, Tyrer, Skubic, Demiris & Hussam, Nursing Outlook, 2005

【Slide29】

TigerPlace General Services

- Concierge service 7 days per week
- Scheduled transportation for shopping and appointments
- Technology Center - PC & internet access
- Restaurant-style dining which includes continental breakfast, & choice of lunch or dinner
- Access to on- and off-site University-related events
 - Sports events
 - Concerts
 - Art exhibits
 - Lectures and discussions
 - Cultural exchange
- Weekly housekeeping & maintenance
 - Utilities, excluding telephone and cable
 - Maintenance-free living

【Slide26】



TigerPlace

【Slide30】

Tiger Care Services

- Annual assessment performed by RN
 - Four in-home RN visits per year
 - RN on call 7 days a week
- Personal Care Services
 - Assist with bathing, grooming, dressing, light housekeeping and cooking
- Medication Management
 - Works with individual's doctor, pharmacist and family
 - Order refills, set up pill planners/medication dispensing machines
 - Monitor for signs of medication-related problems



【Slide27】



【Slide31】

Aging in Place Interventions

- RN nurse care coordinator
- Veterinarian to identify pet problems
- Follow both home health and in-home services for seniors
- At least monthly follow up related to plan of care
- Health promotion
- Early intervention

【Slide28】

Pet-Encouraging Construction



■ A pet-friendly TigerPlace

- Screened porches
- Wide windowsills
- Outside doors
- Tile floors in entry
- Interior Courtyard
- Walk trails
- Fenced areas

【Slide32】

Common Areas



- Private Dining
- Meeting Room
- Bengal Lair Bar
- Spa
- Walk-in Pool
- Theatre
- Beauty/Barber Shop

【Slide33】

Apartments



- Efficiency, one and two bedroom apartments
- Pet-Friendly
- Rented on a monthly basis
- Housekeeping
- 2 meals/day
- Laundry/Kitchens

【Slide37】

Amenities

- Exercise Room
- Sports Bar
- Library



【Slide34】



【Slide38】

TigerTotal Fitness

- TigerFitness Center
 - Includes state-of-the-art equipment like the NuStep stepper machine
 - Daily group exercise classes
 - Customized program to promote strength and flexibility
 - Outdoor TigerTrails

【Slide35】



Each apartment has a small kitchen

【Slide39】



Pet-friendly porches & walk trails

【Slide36】



TigerPlace Pet Initiative (TiPPI)



【Slide40】

Mission & Goals

- Foster a pet-inclusive environment at TigerPlace based on the scientifically demonstrated health benefits of human animal interaction older adults and pets
- Facilitate excellent veterinary care of TigerPlace residents' pets, while providing learning experiences for veterinary medical students to work with older clients
- Promote research into the benefits of human animal interaction
- Provide foster care and adoption services for bereaved pets of TigerPlace when their owners are deceased or can no longer care for them

【Slide41】

Frequency of interactions by condition and category of interactee

	Friend	Acquaintance	Stranger	Total
Dog	34	57	65	156
No Dog	26	21	3	50
Total	60	78	68	206

The analysis confirmed the differences between the Dog and No Dog conditions in the overall frequency of interactions ($\chi^2(1) = 57.3, p < .001$). However, the presence of the dog was associated with relatively few additional encounters with friends, but many additional encounters with acquaintances and, more particularly, with strangers ($\chi^2(2) = 30.8, p < .001$).

Although there was a substantial increase in the numbers of encounters experienced when in the presence of the dog, there was no interaction between the presence of the dog and the length of the encounters ($\chi^2(3) = 2.5, n.s.$), that is, the presence of the dog did not influence the length of interactions. There was no interaction between the presence of the dog and the sex of the interactee ($\chi^2(1) < 1, n.s.$), that is, the gender of the interactee did not influence the social catalysis effect of the dog.

McNicholas, J., & Collis, G. (2000). Dogs as catalysts for social interactions: Robustness of the effect. *British Journal of Psychology*, 91, 61-70.

【Slide45】

Parameters of Pet Ownership

- Limit = 2 pets
- Pets welcome in common areas on lead
- Deposit = \$250
- Intake assessment done on all pets
- Vaccination records kept in exam room



【Slide42】

Psychosocial Benefits of HAI

- Pet owners less likely to be depressed...

(Garrity, Stallones, Marx, & Johnson, 1989)

- and have better morale

(Lago et al., 1989)



【Slide46】

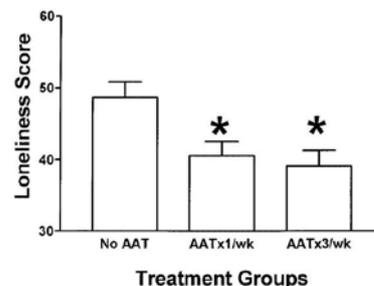
Scientific Underpinnings: Older Adults and Pets



- Pets love unconditionally without evaluating us, (Allen, Blascovich, Tomaska & Kelsey, 1991)
- are often viewed as "members of the family," (Cohen, 2002)

【Slide43】

Mean values for UCLA Loneliness Scale (Version 3) for three groups in AAT Study



Means are shown with their SE. *Indicates the loneliness score was significantly lower ($p < .05$) in comparison with the control group. The two AAT groups did not differ from each other, $n = 15$ /group. [The ANCOVA was significant, $F(2,44) = 5.21, p < .001$, with an effect size (eta squared) of 0.206 and an observed power of 0.810. The covariate was also significant, $F(1,41) = 21.14, p < .001$ with an eta squared of 0.340 and an observed power of 0.994].

Banks, M., & Banks, W. (2002). The effects of animal-assisted therapy on loneliness in an elderly population in long-term care facilities. *Journal of Gerontology: Biological Sciences*, 57A, M428-M432.

【Slide47】

- who can inspire us to have fun!

(Berryman, et al., 1985)



【Slide44】

Physical Benefits

- Older pet owners exercised more (Garrity et al., 1989), had fewer MD visits (Siegel, 1990)
- walked longer and had lower triglyceride levels than non-dog owners (Dembicki & Anderson, 1996), and ...



【Slide48】

- Pet owners more likely to survive one year after heart attack, (Friedmann et al, 1995)
- Had lower blood pressure, triglyceride & cholesterol levels, (Anderson et al 1992)



【Slide 49】

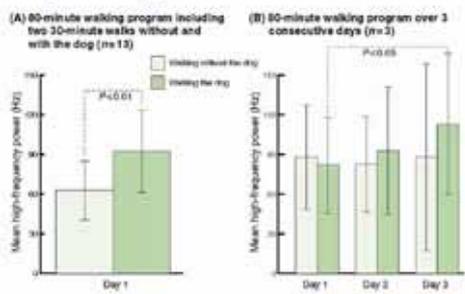
Education

- Excellent Vet student learning experiences- working with older clients & older patients



【Slide 53】

Parasympathetic neural activity during dog walking



Motooka, M., Kinko, H., Yokoyama, T., & Kennedy, S. (2006). Effect of dog-walking on autonomic nervous activity in senior citizens. *NAJ*, 104(2)60-63.

【Slide 50】

DVM Housecalls



- DVM visits all pets monthly
- Minor procedures done in exam room
- Conducts classes on pet issues

【Slide 54】

TiPPI Components



- Vet Med Exam Room
- DVM House Calls
- Pet Care Assistants
- PAWSitive Visits
- Bereaved Pets Endowment
- HILLS Feeding Program

【Slide 51】

Lifelong learning about pets



- Pet behavior screening and training
- Classes for Sr.s:
 - Pet selection
 - Routine care
 - Emergency care
 - Pet training

【Slide 55】

Practice: In-House Pet Medical Care



- Provide pets of TigerPlace with stellar medical care



【Slide 52】

Pet Care Assistants



- Walk dogs PRN
- Clean cat litter boxes
- Bring supplies
- Give medications
- Assist the DVM

【Slide 56】

Case Study 1: Successful owner-pet care at TigerPlace

- 96 year-old lady with 28 year-old cat
- "Cleo" (cat) lost weight, was listless, drooling and gradually unresponsive
- "Cleo" seen by DVM & taken to vet clinic
- Diabetes diagnosed and insulin started
- Pet Care Assistants gave insulin AM & PM daily for 3 months
- Cat went into remission and owner says "Cleo is the reason I get up in the morning."

【Slide 57】

HILLS Feeding Program



- Low-cost pet food available for sale to TP pet owners through Vet School feeding program

【Slide 61】

Case Study 2: Successful owner-pet care at TigerPlace

- 85 year-old lady with 12 year-old Shi Tzu
- "Rags" (dog) developed severe eye redness
- "Rags" seen by DVM & taken to vet clinic
- Eye inflammation treatment started
- Pet Care Assistants gave eye drops AM & PM
- "Rags" eyes are no long inflamed

【Slide 58】

TigerPlace/Aging in Place Outcomes for Older Adults (1999-2003)

タイガープレイス年を重ねる場所で過ごす高齢者 成果

- 250名の高齢者の老人ホームへの入居を延期または回避。
- このプログラムに参加した高齢者は（通常の老人ホームなどに入居した高齢者と比較して）：
 - 健康状態が良好 (ADL機能、気分の落ち込みが少ない、認識がしっかりしている、失禁しにくい、痛みが少ない、息切れが少ない)
 - 経費の節約 毎月\$1,591 (老人ホームと比較) \$483 (コミュニティと比較)

【Slide 62】

PAWSitive Visits



- Weekly animal visits program (AAA)
- Variety of species
- Classes taught about animals
- Reminiscence!

【Slide 59】

TigerPlace/Aging in Place Outcomes for Older Adults (1999-2003)

- Postponed or prevented nursing home admission of over 250 older adults
- Older adults who participated in the Aging in Place program (when compared to similar individuals in nursing homes and other home-based programs)
 - Clinical outcomes better (ADL performance, less depressed and better cognition, less incontinence, less pain and less shortness of breath)
 - Cost savings \$1,591 per month (nursing home comparison) \$483 (community comparison)

【Slide 63】

Bereaved Pets Endowment



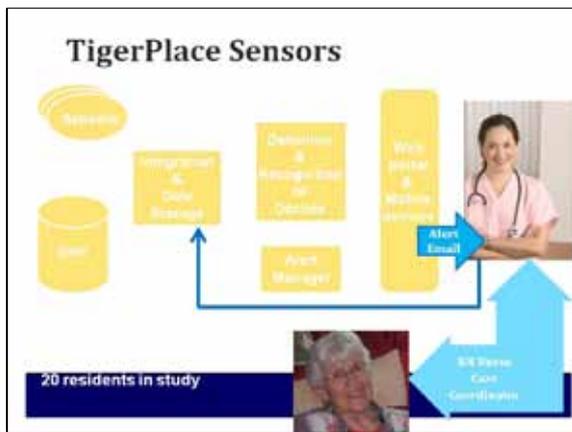
- Fund to provide foster care of TP pets when their owner dies
- In-house foster homes

【Slide 60】

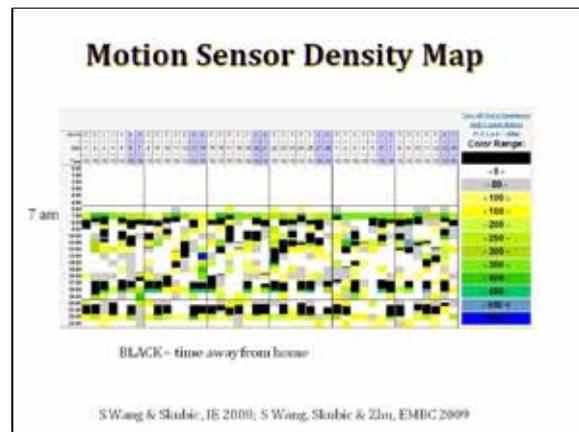
TigerPlace/AIP Outcomes 2004-2008

- RN nurse care coordination reduces adverse health events, improves care outcomes, reduces nursing home utilization, and is cost-effective
- Costs for any participant (even through end of life) have not approached nursing home care (average annual care cost for 2008 was \$7,331 for those nursing home eligible and \$2,591 for those not eligible, plus housing cost)

【Slide 64】



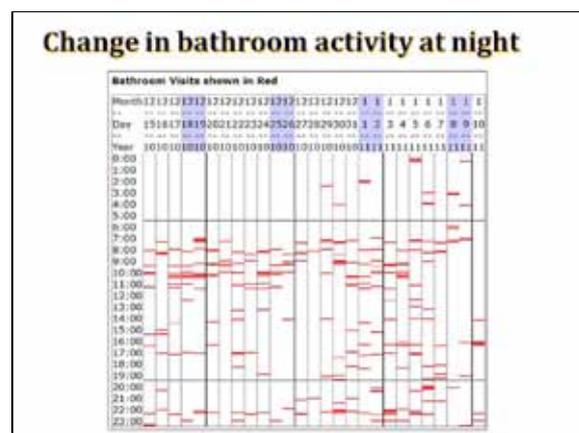
【Slide 65】



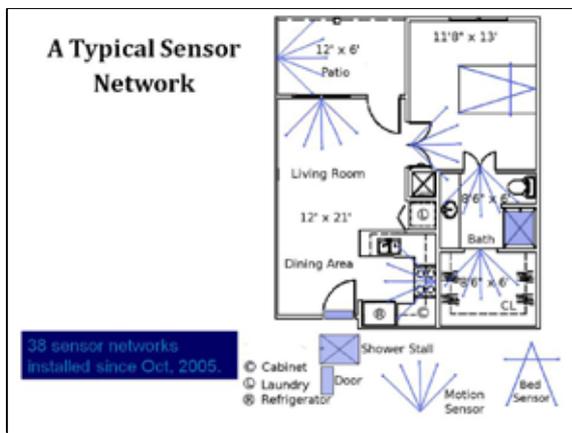
【Slide 69】



【Slide 66】



【Slide 70】



【Slide 67】

Early Illness Alerts from Email

24HR Behavior Alerts:3020
 certlogger@seni.ccc.missouri.edu
 Tue 6:17:00 12:17 PM

24 Hour (Midnight - Midnight) Alert Summary for 3020 on May 16, 2011.

Time Frame in Days: 14

**** ABNORMAL BEHAVIORS ****

[INCREASE in Bed Get Up Events \(10:00 Decrements\)](#) [Submit Feedback](#)

- CERT:agan 4.23

Link to the interactive sensor interface

Feedback from clinicians is used to build a database of good vs. poor alerts for future refinement

Turnts et al., HealthCom 2011; Alexander et al., J. of Healthcare Eng., 2011

【Slide 71】

Web-Based Interface for Sensor Data

- Interactive interface to display sensor data for researchers, health care providers, and residents

- Histograms in increments from hourly to daily
- Activity maps
 - Motion density, bathroom visits, time in bed
- Refined with input from nursing, medicine, health informatics, social work, and residents

Demiris et al., ICOST 2006; Skubic et al., TH 2009; Alexander et al., NIR 2010

【Slide 68】

Case study: Early detection of older adult's health problem

- Increased bathroom visits, especially at night, may be a sign of a health issue
- Based on the two alerts, care coordinator assessed resident and initiated a physician referral
- Resident was diagnosed with a urinary tract infection (UTI), was started on antibiotics, and made a full recovery

【Slide 72】

NIH study results after 6 months

- Statistically significant differences in health outcomes between the control group and the test group (with early illness alerts)
 - Several gait parameters measured on the GaitRite
 - Left hand grip average (measures strength)

【Slide 73】

Current Joint MU-GE project

- Technology to Automatically Detect Falls and Assess Fall Risk in Senior Housing
 - Funded by AHRQ, \$1.9K (Rantz, PI)
 - Develop and test the GE radar sensor in TigerPlace apartments

【Slide 77】

Bed Sensor Data Changes



【Slide 74】

Radar Installed in TP Apartments



【Slide 78】

Pending MU-GE Proposal

- Passive sensing technology detection for independence, chronic, acute conditions, NIH, Rantz (PI), \$2.2M
- Develop and evaluate new passive bed sensors to capture quantitative pulse and respiration rates and more!
 - Radar bed sensor from GE
 - Hydraulic bed sensor from MU

【Slide 75】

WebCams and Kinect for Ground Truth



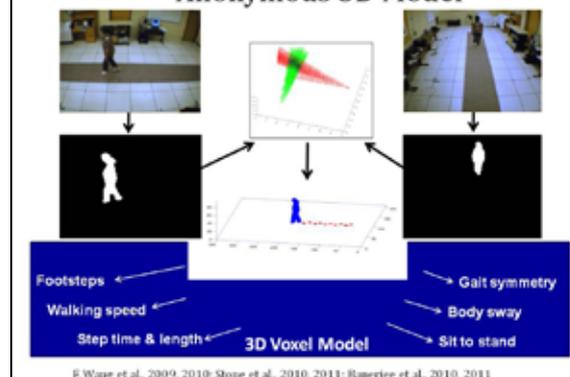
【Slide 79】

MU Hydraulic Bed Sensor - Placed Under the Mattress



【Slide 76】

Anonymous 3D Model



【Slide 80】

Conclusions: Residents & Technology

- Older adults take ownership of the sensor data
- They want control over who has access to their data
- Acceptance is related to need and perceived benefits.
- Privacy can be sacrificed for needs/benefits
- Older adults tend to underestimate their own needs
- Older adults about the look of the technology
- Older adults are willing to accept technology if it
 - Meets a need
 - Has an appropriate interface (address sensory limitations)
- They do not consider silhouette imagery to be a privacy invasion

Dennis, Parker Oliver, Dickey, Shabir, Rantz, Technology and Health Care, 2008
Dennis, Parker Oliver, Giger, Shabir & Rantz, Technology and Health Care, 2009

【Slide 81】



Conclusions: Seniors and Pets

- Older adults love being able to move in TP with their pets
- More humane environment than the traditional "get rid of pets" approach when care needs increase
- TigerPlace pets are also aging in place!

【Slide 82】



Additional Information & Papers

- TigerPlace Pet Initiative (TIPPI)
www.rechai.missouri.edu
- Center for Eldercare and Rehabilitation Technology
www.eldertech.missouri.edu

【Slide 83】



And now for
your
questions.....



【Slide 83】