Podcast Transcript

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Thought Leader: Melissa Hammond MSN, GNP, Managing Director, Snowfish

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In this episode I meet with Melissa Hammond MSN, GNP, Managing Director at Snowfish. We talk about our aging society and how the industry needs to address its therapies to reflect the differences in age groups, including the old and the very old.

I'm Dan Limbach, your host and producer of the PharmaVOICE Webcast Network.

Dan: Welcome to the podcast program, Melissa.

Melissa: Thank you.

Dan: Melissa, I'm a big Rolling Stones fan and I was intrigued by the title of this podcast. So let's start out with the first question. What do Mick Jagger, cardiovascular disease, diabetes, and cancer all have in common?

Melissa: A very good question. It's actually geriatrics. It really may be hard to believe but we are embarking on some of our biggest rock and entertainment icons entering their golden years. Again hard to believe, Mick Jagger is still going strong at 69 years old, Tina Turner, she is 73, Clint Eastwood is over 80.

Additionally, looking at the therapeutic side, it is the older population who comprise a large population of the consumers and products within three of the largest therapeutic areas within our industry; that being cardiovascular disease or cardiac disease, type 2 diabetes and cancer. Just to give you some statistics, individuals over 65 years old make up 21% of patients with diabetes.

Additionally, it's estimated that 87% of people who die of coronary heart disease are 60 and older and approximately 56% of cancers occur in the over 65 population.

Additionally, it's important to recognize that not all of these conditions are diagnosed when an individual is older. It may actually be diagnosed at a younger age. What's interesting about this is that innovations have resulted in the allowance that these diseases are no longer death sentences, so people are living longer with them. So

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they're diagnosed maybe in their 40s or 50s and they're actually living to their 70s or 80s with these chronic conditions.

Dan: Very good. Melissa, you obviously have a great deal of enthusiasm for this topic. What's your background?

Melissa: Thank you for noticing that. I do truly have a lot of enthusiasm. I actually began my career in nursing and then went on to get a graduate degree from Columbia University in geriatrics. I was interested in this because when I was working on the unit I was working with many patients that were considered geriatric patients, and this population was quite heterogeneous and quite active.

It really was quite intriguing the way they reacted to disease and responded to medication and I really wanted to learn more about this. So beyond my graduate work; I worked in both inpatient and long term care within the geriatric area and have also published a number of articles in the area as well. To follow on, my industry experience has been in a number of products in therapeutic areas relevant to geriatrics, including type 2 diabetes, cardiovascular disease, arrhythmia and Alzheimer's disease.

Dan: Great. Now let's dig a little bit deeper into the topic. What is different about the aging population now as compared to, say, 30 years ago?

Melissa: I would say that the population is much more robust and active. When you look at the newer senior living communities you're seeing tennis courts. You don't longer see shuffle boards courts. You see state of the art gyms and people are using them. You see older people in senior yoga classes. There's even an 80 to 85 year old category in the Iron Man triathlon. So it's a more active population.

Additionally of late we're seeing an explosive growth of the older population. By 2020 and again think about it, that's only 7 years from now, the United Nations estimates that globally the number of individuals over 60 will grow to 1 billion. Amongst this age group the fastest growing segment is those over 85.

It's important to recognize that while various factors including environments and illness will result in variability amongst the older population and how changes are

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manifested, it's important to recognize that even someone, such as Mick Jagger, who exhibits such high energy, will experience these physiological deficits to some extent.

There is no individual that is over 65 that is immune to the physiologic changes of aging and therefore, the approach of how we manage the health care of this new generation, certain physiologic changes but yet very active, very robust, seem younger than their years, it will need to be very different from what has been customarily used, and it is exciting that there is significant room for innovation.

Dan: You mentioned the physiologic deficits. Can you explain how aging individuals are different from younger ones?

Melissa: Absolutely. These changes occur with aging in all organ systems. So there's really not one organ system that is spared from these changes. For example, the cardiovascular system, it's affected by decreases in cardiac output and that is the amount of blood that is pumped by the left ventricle with each cardiac cycle. You'll see an increase in blood pressure and arterial stiffening via arteriosclerosis. Individuals also experience a decrease in lung vital capacity and slower expiratory flow rates coupled with impaired gas exchange.

To really drive this home, anybody who has used a piece of gym equipment will see that there is a table which shows the heart rate range for different ages. As you can see with increasing age, that heart rate range tends to decrease. For example, for a 30 year old the maximum heart rate might be 190, and in an 80 year old it's 140.

Additionally, we'll see progressive elevation of blood glucose occurring with age on a multifactorial basis, and aging will also impact the pharmacokinetics and pharmacodynamics of many drugs by reducing hepatic metabolism and renal function while increasing the volume distribution of lipid soluble drugs since you'll see a decline in lean body mass due to loss and atrophy of muscle cells and consequently this extends a drug's elimination half life. So you will see the changes in the response to certain medications from an efficacy as well as a safety perspective.

Dan: Certainly. Are these differences also realized in clinical practice?

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Melissa: They are when we're talking about children and adults. So we'll tend to acknowledge the physiological differences between a 5 year old and a 30 year old but however, we don't necessarily seem to recognize these distinctions between that same 32 year old and a 75 year old. For example, if you just pick up an average antihistamine or a cold medication, you'll see that there's different dosing that goes up to 12 years old. Beyond 12 years old, everybody may take two and it doesn't matter if somebody is 18, if they're 50, if they're 80. So we're not really seeing that as standard practice yet.

When I was a critical care nurse earlier in my career in the unit where I worked we managed cardiac surgical patients ranging from newborns to those well into their 80s. When it came to pediatric patients, we would calculate drugs to the nearest milligram. But when it came to somebody who was in their 80s, there was really no difference between somebody who was 95 pounds in their 80s than to somebody who was 55 years old and 225 pounds; everybody pretty much got the same dose.

Really to answer that question, we're really not seeing those differences recognized in clinical practice.

Dan: That's very interesting and I'm sure something that will be addressed in the future. This is a very exciting time for our industry. You've recently described aging as the proverbial elephant in the room. What do you mean by that?

Melissa: Ah yes, it's a topic that many in our industry don't really tend to address head on. Historically it's not really been new or sexy. The concept of chronic conditions, chronic disease really isn't and that's what is related when we think of the geriatric patients. Really what is missed is the fact that although the 65 and older age group currently comprises 13% of the population (we know that will be increasing relatively soon), they account for approximately 34% of the prescription medication use.

Additionally while diseases such as diabetes and cardiovascular disease might be diagnosed in one's 50s, they will be managing these conditions life long. So what also tends to be overlooked is that an individual may not necessarily continue to respond to the same treatment the same way in their 70s and 80s that they did in

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their 50s. So while industry has been doing a great job in helping live longer and again through this innovation, we're not necessarily yet taking the steps that they live healthier.

Dan: Let's talk about some solutions to some of these challenges. What should the industry be doing differently?

Melissa: From my perspective the approach to treating the older population may essentially be equated to one of the hottest topics of the day – personalized medicine. There is really no population that should be treated with such an individualized approach than the geriatric patient.

If you think about it, age itself is a key factor in differentiating a given individual's response to a certain medication from their younger counterparts. Additionally the older population is not one homogenous group. There are certain physiologic distinctions between the old and the oldest old, that being the 85 and older. When looking at all ages within the geriatric range, one must take into consideration levels of frailty and comorbidities.

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So really, thoughtful drug design and more robust education of the medical community are really key.

Dan: You just said something very interesting there. Please expand on what you mean by thoughtful drug design.

Melissa: Ideally drugs destined for the aging population should be developed so they truly fit the needs of the aging body while taking into consideration the heterogeneity of this group. So they would really produce effects at a pace which maintains physiologic balance and that is slow enough to reduce shock to the system, yet act as quickly as possible to relieve symptoms at minimal doses. The side effects should be carefully considered. They are a significant factor in poor adherence to medications.

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It's interesting, if we think of personalized medicine we don't generally think of the geriatric population but we really should be thinking that way.

As I noted earlier, the new generation of aging population they're more robust and active. So there's even now a lower tolerance for untoward effects which get in the way of an active lifestyle, such as dizziness and lethargy. So if somebody is really just kind of hanging around, sitting on the back porch, not really doing very much, not very active, they may have a higher tolerance for something that's going to make them tired. If they're really getting out there, they're being physically active, they're mentally active, they may be taking classes, they really have no tolerance for that. As drugs are being designed, this needs to be taken into consideration.

Dan: So what are some of the ways we can address some of these objectives?

Melissa: As I mentioned before, personalized medicine is really one approach. It's interesting, if we think of personalized medicine we don't generally think of the geriatric population but we really should be thinking that way. There are essential tools such as intelligent dosing, using computer models which take into consideration a multitude of factors to determine the ideal medication dose for a given patient.

Another is insuring that adequate data are available so that clinicians can be confident that the medications they use are safe and effective in the older population. We've observed some progress over the past decade however, there's still room for improvement and that's really with respect to enrolling patients who are over 75 and over 85. For example, a 2007 studied sponsored by the Robert Wood Johnson Foundation which reviewed 109 clinical trials, revealed that a fifth of them excluded patients above specified age and that almost half of the remaining studies used criteria likely to exclude the elderly anyway, such as frailty or impaired cognition.

There's some good news on the regulatory side. There has been a push as of late by regulatory agencies, both in the US and Europe, which are really driving us towards the goal of insuring that these real world geriatric patients, including the oldest old, including those with comorbidities, including those receiving concomitant therapies, those who are frail, are well represented in clinical trials of new therapies or new formulations.

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So there's a significant opportunity to educate physicians who are treating the older population on what is a PIM and what are some more appropriate alternatives.

Is this an easy endeavor? Absolutely not. We recognize that this is not easy. These trials that I described are more difficult to conduct given the co-morbid conditions and medications. Additionally, adverse event definitions used for the general population may not necessarily be applicable to older patients. When misinterpreted, these can result in a product not faring well to the scrutiny of the regulatory bodies.

Dan: How can medical education be utilized for maximum benefit?

Melissa: Industry can truly take the lead in spearheading education targeted to those clinicians whose practices are comprised largely of older individuals which would be focused on more effective drug selection in this patient population. So really the focus is on those drugs considered potentially inappropriate drugs (or PIMs). A number of mechanisms have been put in place to reduce the prescribing of these PIMs but considerable use still persists.

For example, a survey of 89 patients reveal that despite the fact that an estimated 25% of their practice consisted of patients over 65, many exhibited a poor knowledge of PIMs and were unaware of prescribing guidelines.

Additionally, a report from a group at Weill Cornell Medical College identified 38% of US-based older adult patients receiving home care were prescribed at least one PIM. So there's a significant opportunity to educate physicians who are treating the older population on what is a PIM and what are some more appropriate alternatives.

Dan: Can applying a specific focus on the aging population benefit therapeutic companies?

Melissa: Absolutely. Absolutely, and I've actually boiled this down to five ways that the industry can optimize on this opportunity.

Number one is using dosing or particular efficacy or side effect benefits in the aging population in repositioning of a currently marketed product. While it would make logical sense that drugs used disproportionately by the elderly would already have geriatric specific dosing in their labeling, this is just not the case. Here's an example.

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In 2005, the FDA approved geriatric dosing for an anabolic steroid indicated for the loss of muscle mass and granted the product a 3-year marketing exclusivity.

In a study performed by Steinmetz and colleagues of 50 oral drugs used most commonly in patients 65 and older and in an inpatient setting, only 8 contained some form of alter dosing guidance on the label specific to geriatric patients. So really only 8 out of the 50, and none out of the 50 included age-specific dosing.

So we've all heard about pediatric exclusivity. Why not geriatric exclusivity? When you take a careful look at the pediatric situation with respect to the value of specific dosing it's easy to see how this parallels the geriatric field because again, to go back to my earlier comment, there is still that distinction between a 32 year old and an 80 year old that you would see between a 32 year old and a 5 year old. So again, significant opportunity here.

Dan: Absolutely. Has any company yet pursued a geriatric indication?

Melissa: Well interestingly in researching circumstances in which this actually took place, our search revealed only one.

In 2005, the FDA approved geriatric dosing for an anabolic steroid indicated for the loss of muscle mass and granted the product a 3-year marketing exclusivity. It's important to note that the exclusivity for adding a pediatric dosing is limited to 6 months.

Moving onto #2, is really looking at a product's appropriateness in the geriatric population such as the Beers Criteria as a method for product differentiation. The Beers Criteria includes drugs for which the risks outweigh the benefits in those 65 years and older and it truly remains the gold standard for identifying potentially inappropriate medications, that is identifying those therapies which either pose high risks of adverse effects or seem to have limited effectiveness in the geriatric population. Really showing that a competitor's product that's on the Beers list while theirs is not, can give a company a competitive edge and this is also likely to have an impact amongst payers who may see that a certain product will be either more effective or have a more benign safety profile and that could be very impactful when they're looking at potentially the payment cure for that medication.

Moving onto #3, companies can consider geriatric use in the development of new drugs for conditions common in older individuals. This takes into account a number

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Not as of yet. In fact, we performed a search of all international trials involving patients over 66 years of age posted on clinicaltrials.gov in which cognition was included as an outcome measure.

of things, such as how older individuals react to certain illnesses, exploring alternate delivery methods that can ensure slow and steady release of the therapy, and insuring the assessment of geriatric specific efficacy and safety endpoints. I just wanted to touch upon these geriatric specific endpoints.

As noted earlier, age-related physiologic changes may, in fact, alter an individual's response to a given therapy. Some of these may include those which impact cognition and function. Therefore, drugs being evaluated for a geriatric population would ideally include these endpoints which expand beyond just the standard efficacy and safety. For example, if the drug results in delirium, reduced function or even incontinence.

Dan: Is this currently the standard practice?

Melissa: Not as of yet. In fact, we performed a search of all international trials involving patients over 66 years of age posted on clinicaltrials.gov in which cognition was included as an outcome measure. Out of the 209 trials that we found, only 5 weren't evaluating a therapy for diseases involving the brain, such as Alzheimer's and now Parkinson's disease.

Moving onto #4, life sciences companies can support innovative education programs to build greater knowledge of aging amongst non-geriatric specialists. This will truly afford the opportunity for companies to provide a value add to their customers with a service that is unique and further differentiate themselves from their competitors. We're always hearing new ideas and really the strive for how do we add value, how do provide value to our customers and really helping physicians who may not consider themselves geriatric experts or, in fact, geriatric physicians because the majority of their patients are over 65, this can truly help them take much better care of their patients and that will truly be a value-added service.

Finally, #5 is that companies can look beyond the pill or device and provide services that will essentially support the therapeutics by addressing such things as lifestyle modification and issues of function. This is actually a trend that we're starting to see within the industry as a whole that really looking beyond the actual therapeutic and providing services or support for some of the ancillary but very important

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aspects of that disease. We certainly see it as a significant opportunity here when focusing on the older population. Really, the complexity of the aging population requires an integrated approach and here's where the life sciences companies can take the lead.

Dan: This is certainly an intriguing topic and it will only become more important in the next 10 or 20 years. Melissa, I want to thank you for sharing your thought leadership and expertise with us today.

Melissa: Well thank you. It's a pleasure being here.

And that does it for this episode. If you'd like to learn more about this topic, please email Snowfish at info@snowfish.net to request a related white paper entitled: Penetrating the Universal Emerging Market: Answers to Ten Key Questions on Developing and Marketing Therapies for the Aging Population. You may also request any of Snowfish's white papers at www.pharmavoice.com/whitepapers. Finally, you can visit the Snowfish website at www.snowfish.net.

Until next time, I'm Dan Limbach.

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