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April 15th, 2024

Dear Regina,

Welcome to BioMarketing Insight's monthly newsletter.

Hope everyone had a good weekend and had a chance to get outside after all the rain we've had.

This month I will cover "Do Infections Accelerate Cognitive Decline and Increase the Risk of Dementia and Alzheimer's?" To find out more, go to the Table of Contents and click on the article link.

If you missed last month's newsletter on "Should the Government Seize Patents for Certain Costly Medications, a Policy Know as the March-in Rights?" Click [here](#) to read the article.

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enjoy the music from the Berklee School of Music in their song "What the World Needs Now," and ending with Celine Dion and Josh Groban with "The Prayer".

Please read on for other current news in the Table of Content below. The next newsletter will be May 15, 2024.

We encourage you to share this newsletter with your colleagues by using the social media icons below, or by simply forwarding this newsletter or use the link below. Should you or your colleagues want to join my mailing list, click on "join my email list" link below.



Sincerely,
Regina Au
CEO, New Product Planning/Strategic Planning
[BioMarketing Insight](#)



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Developing a Product? Commercializing a Product?

If you are developing a product and have not conducted the business due diligence to determine commercial viability or success, contact [me](#) for an appointment. For successful commercial adoption of your product or looking to grow your business, contact [me](#) for an appointment.

For more information on our services, click on the links below:

[Product Development](#)

[Market Development](#)

[Marketing Strategies](#)

[Scenario Planning](#) - for more information, email [me](#).

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I am pleased to announce that I spoke at the IVC 2023 Conference in Woburn, MA on October 23 - 25, 2023. The title of my presentation is "Lessons Learned from the Covid - 19 Vaccine and What is Needed When Developing a Vaccine for a Successful Rollout". For more information on my presentation, click [here](#). For more information on the conference, click [here](#).

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Save-the-Date: AAPI Heritage Festival - Thursday, May 9th, 2024

I am pleased to announce that AAPIEC Inc. in collaboration with the Middlesex Community College (MCC) will be holding the 2024 AAPI Heritage Festival on Thursday, May 9th, 2024. MCC has generously offered to host the Festival and AAPIEC Inc. is displaying the "Contributions AAPIs Have Made to American History" exhibit. Admission is free. Please see detail below:

The exhibit will be on display May 9th and May 10th for those who wish to see the complete exhibit with new ethnic groups added each year. For May 10th, see details below for further information. Please note that the hours are different.

I am also trying to get the exhibit displayed in either Cambridge or Boston for those who may not be able to get up to Lowell due to transportation. Stay tune for more details.

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<https://aapiwoburn.weebly.com/festival-information1.html>.

To see photos of last year's festival click on this [link](#).

Look forward to seeing you on May 9th.

Thursday, **May 9th, 2024**

Location: MCC Lower Café (Lowell Campus)

33 Kearney Square, Lowell, MA 01852

Time: 4 PM – 7 PM

Admission: FREE

Parking: Free Parking

Free Validated parking is available at:

Lower Locks Garage

90 Warren St. , Lowell, MA 01852

Roy Garage

100 Market St. , Lowell, MA 01852

Here is the link to the parking map:

<https://www.middlesex.mass.edu/transportation/parking/parkmap.aspx>

Friday, **May 10th, 2024** - exhibit only

Location: MCC Lower Café (Lowell Campus)

33 Kearney Square, Lowell, MA 01852

Time: 12PM – 5 PM

Admission: FREE

Parking: Free Parking - inform the front desk so they can get a sticker for validated parking.

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Inspirations

Enjoy the song "What the World Needs Now" virtually with the students from the Berklee School of Music.

The Pandemic is NOT Over, But We Will Get Through It Together By Taking COVID Precautions: Masking, Regular Testing, Updated Vaccinations and Practice Good Hygiene Every Day.



Let's End with Celine Dion & Josh Groban Singing "The Prayer"

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One Biotech Executive's View on the COVID-19 Vaccine

I am pleased to announce that my article on the COVID-19 Vaccine was published in Lioness Magazine. To read my article click on the link [here](#).

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Do Infections Accelerate Cognitive Decline and Increase the Risk of Dementia and Alzheimer's?

We all know that when we are young, we have a healthy immune system that can fight off infections or recover from an infections fairly quickly if it is a bacterial infection with the help of antibiotics. Viral infections since there is no treatment we have to rely solely on our immune system to recover.

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complications is the acceleration of [cognitive decline](#). Infections can cause short term cognitive impairments which are reversible once the infection is cleared, but they can also lead to long-term cognitive impairments in people who are already on the trajectory toward dementia. An infection can unmask dementia in people with subtle symptoms.

[Cognitive impairment](#) is a critical healthcare problem worldwide. Population studies have shown that 3–19% of the population older than 65 years meet criteria for mild cognitive impairment (MCI). Of these, more than [50%](#) will develop dementia. Global prevalence of dementia in the population is 1.3%, and 7.3% in people aged 65 years or more. Many studies have shown a direct influence of viral infections on cognition, especially in the development of MCI and dementia. The high prevalence and the overlap of both conditions underscore the importance of a better understanding of the role of viral infections in the pathogenesis of dementia.

In the last decades, the [role of viral infections](#) in cognitive impairment has been widely discussed. Viruses, such as herpes viruses, cytomegalovirus, human immunodeficiency virus (HIV), Varicella zoster virus (VZV), Epstein–Barr virus (EBV), and Hepatitis C virus, have been implicated in Alzheimer's disease pathogenesis. Mechanisms underlying viral pathogenesis in these conditions may include a direct viral effect or indirect mechanisms, such as inflammation, epigenetic changes, and hypercoagulable changes, that may impact on brain structure and function in healthy or in cognitively impaired individuals.

Emerging infectious diseases, such as the COVID-19 pandemic, affecting globally populations, should be monitored for potential neuropsychiatric compromise. COVID-19 has not only challenged physicians and health care professionals with its high mortality and severe clinical manifestations, but also for the emergence of atypical and unexpected clinical presentations, such as cognitive impairment.

[Longitudinal studies](#) have found that hospitalization for [common infections](#), such as pneumonia and urinary tract infections are associated with at least [1.4-fold higher risk](#) for dementia compared to well-functioning older adults. The study also found that the risk was similar whether it was mild cases or severe life-threatening cases, suggesting that risk is not depended on the severity of infection. However, it did show that the risk may be depended on the [frequency of infection](#) that increases the risk of dementia in the elderly. This increased risk is driven by dysfunctional immune system or weakened response in people predisposed to dementia.

There is also increasing evidence that cognitive impairment is more frequent in those with chronic lung disease than those without. [Chronic obstructive pulmonary disease](#) affects 210 million people, with cognitive impairment present in 60% of certain populations.

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of the variance in cognitive ability in those patients with COPD who are hypoxaemic.

As the immune system ages, it can become dysfunctional, leading it to a weakened early response that is ineffective in clearing the microbe. This weakened response induces the body to elicit a very strong late response, causing [systemic inflammation](#) that drives cognitive impairment. Communication between immune cells and neural cells is important for the maintenance of cognitive function. When inflammation disrupts this communication, this leads to cognitive impairment.

Inflammation in the brain can lead to [delirium](#), or acute mental confusion. People with dementia as well as those with subclinical symptoms who are progressing towards dementia are at highest risk for delirium. Therefore, acute delirium can be one of the presenting signs of infection in someone with dementia. A recent study found that the changes that take place in the immune system during an infection-related delirium are the same as those that cause [neuronal damage](#) in Alzheimer's disease.

More research is needed to understand the pathology of dementia and the correlations of the various diseases mentioned above with dementia.



Dr. Dawn Bowdish, Canada Research Chair in Aging and Immunity

Source: Georgia Kirkos photo

[Dr. Dawn Bowdish](#), a McMaster University researcher and Canada Research Chair in Aging and Immunity is trying to do just that. She created an intensive care unit to nurse

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She was awarded a \$750,000 grant to determine what respiratory infections result in the worst cognitive declines, why it happens and what treatments could prevent it. She also received funding from the Canada Foundation for Innovation for equipment to measure mouse cognition and behavior. The researchers gave the old mice respiratory infections and then cared for them just like a hospital would.

“Very few people know or understand about the role of infectious disease in late life health issues,” said [Bowdish](#). “My dream is that older adults would come to the hospital to get treated for their pneumonia, and we give them something else that would help prevent this increased cognitive decline risk.”

“Respiratory infections seem to be the worst offenders — those are the ones that are most strongly associated with increased risk,” said Bowdish. “But we don’t really have good data breaking it down further than that. Is COVID the worst? Is RSV the worst? Is influenza the worst?”

Finding the answers can have a great influence on “public policy” as to which vaccines get funded by the government and convince seniors to get the shot so they don’t end up in the hospital with a serious respiratory infection.

“Many older adults who are sort of ambivalent about getting a flu shot but feel very strongly about maintaining their independence and not getting dementia might be really inspired to get flu shots,” [Bowdish](#) said. “For vaccines like RSV, we don’t actually have them covered for most people. That might change the economics of who gets these vaccines and how much we advocate for older adults to get them.”

It took a decade for Bowdish to prove the link between serious respiratory infection and dementia in studies involving mice she cared for into old age.

“I’m one of the only people in Canada who’s crazy enough to age mice for years on end,” she said. “It’s extremely costly. It’s been very challenging.” But the “key” to the study’s success is that the mice are all at least two years old representing the aging population as oppose to using young mice.

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Closing Thoughts

No one likes to get old because there is a natural decline in our body functions which is part of the aging process. Most older adults can't do the same things they used to when they were in their 20s or 30s and they don't recover as fast as before. There is also a social stigmatism with becoming old.

Many older adults fear they will get dementia or Alzheimer's in losing their memory, not recognizing their loved ones and losing their independence. A lot of research has been done for decades in trying to find a treatment that will halt the progression of dementia and Alzheimer's.

However, understanding the pathogenesis of both diseases is very complicated and the link to respiratory disease that can further the progression is even more complicated. Many companies have focused only on beta amyloid or some only on tau. But since everything is linked some more strongly than others, I think scientists need to focus on both beta amyloid, tau and respiratory disease simultaneously. Easier said than done but it is refreshing to know that researchers like Dr. Bowdish is focusing on the link between respiratory disease and cognitive decline because diseases and their affect on the body doesn't happen in isolation.

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Should you have any questions or need of assistance with your business due diligence, determining your product's value proposition, target product profile and

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