March 15, 2024

The Honorable Zack Stephenson
Minnesota House of Representatives
#449, State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
St. Paul, MN 55155

Re: Support for HF 3330– Coverage of Rapid Whole Genome Sequencing

Dear Chair Stephenson and Members of the House Commerce Finance and Policy Committee:

On behalf of Alexion, AstraZeneca Rare Disease, thank you for the opportunity to provide written testimony in support of HF 3330, legislation that would help improve the time to diagnosis for rare disease patients by requiring coverage of rapid whole genome sequencing (rWGS) for certain critically ill patients.

Rare Disease Diagnostic Odyssey

Early diagnosis of rare diseases is a critical step to enabling optimal outcomes, but with more than 7,000 known rare diseases, most presenting as atypical from classical descriptions, it's very difficult for rare disease patients to receive a timely and accurate diagnosis. **On average, it takes rare disease patients 4.8 years and 7.3 different specialists to be properly diagnosed[1].** This diagnostic odyssey leads to an increased burden on patients and caregivers, the potential for further disease progression, and the incurring of unnecessary healthcare costs. When used in an inpatient setting for critically ill patients with no diagnosis, as is the case with HF 3330, rWGS can help provide quick and definitive answers for families, allowing physicians to provide timely, targeted treatment that can help improve outcomes for patients and prevent the needless suffering incurred during the diagnostic odyssey.

Further, the delays in diagnosis for rare disease patients are costly for patients and the healthcare system. According to a September 2023 study conducted by the EveryLife Foundation, delayed diagnosis of a rare disease can cost up to $517,000 when considering healthcare costs and loss of productivity.[2]

Current Coverage Limitations of rWGS

Although momentum is building to improve access to rWGS for critically ill patients in Medicaid, coverage remains extremely limited for patients seeking the testing who are covered through private health insurance. Currently, 10 state Medicaid programs provide some form of coverage for rWGS in line with the proposed private coverage mandate, with more considering coverage.[3] This includes Arizona and Florida which are in the process of implementing new coverage due to legislation passed by their respective legislatures in 2023.[4] [5] However, according to a 2022 analysis

[1] *Wakap et. Al. 2019; Global Genes: Rare Facts 2020*
[2] *The Cost of Delayed Diagnosis in Rare Disease: A Health Economic Study*
[3] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9857227/
[4] https://www.azahcccs.gov/Resources/Downloads/MedicaidStatePlan/Amendments/2023/SPA23-0018Submitted.pdf
[5] https://www.flsenate.gov/Session/Bill/2023/2500/BillText/er/PDF

conducted by Rady Childrens Hospital Institute for Genomic Medicine – a global pioneer in the use of rWGS to diagnose rare diseases– **just 11 commercial plans in the United States provide coverage for rWGS** that includes critically ill infants or children admitted to an intensive care unit, none of which are in Minnesota.[6] These gaps in coverage present significant access challenges for undiagnosed rare disease patients.

Cost Reductions Associated with rWGS

The use of rWGS as a diagnostic tool for critically ill infants has been piloted in several states in recent years, beginning with Project Baby Bear in California in 2018. In this study, 178 infants were tested using rWGS, resulting in a diagnosis for 76 (43%) of the patients.[7] Because rWGS was able to diagnose patients and avoid unnecessary invasive procedures and additional NICU days, the study also estimated a $2.5 million cost savings associated with the use of rWGS in this patient population.[8]

Additionally, Project Baby Deer in Michigan demonstrated similar results and led to Michigan Medicaid's coverage of rWGS. Through 18 months, the pilot program used rWGS on 89 critically ill infants and children, resulting in a diagnostic rate of 39%.[9] Importantly, the study concluded that between 95-214 hospital days were avoided and rWGS saved $4,155 per patient.[10]

Summary

The use of rWGS to help diagnose critically ill infants and children has been well-studied in recent years, spurring state action on the issue to improve coverage and access. Coverage of rWGS has the potential to revolutionize the time to diagnosis for rare disease patients – but only if they can access it. HF 3330 would provide reasonable, carefully considered coverage for patients most in need, helping to alleviate the burden of the rare disease diagnostic journey for Minnesota families and save money on healthcare costs.

We urge your support for HF 3330. Please do not hesitate to reach out with any questions.

Sincerely,

Luis Rodriguez
Director of State Government Affairs
Alexion, AstraZeneca Rare Disease
Luis.Rodriguez@alexion.com

[6] https://radygenomics.org/wp-content/uploads/2022/01/Reimbursement-Update-and-rWGS-Quick-Guide-Jan-2022.pdf
[7] https://radygenomics.org/wp-content/uploads/2021/04/PBB-Final-Report_07.14.20.pdf
[8] Ibid.
[9] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9857227/
[10] Ibid.

Chair Stephenson and Members of the Committee,

Thank you for the opportunity to provide testimony in support of HF 3330, a bill that would help reduce the diagnostic odyssey for rare disease patients by requiring coverage of rapid whole genome sequencing (rWGS).My name is Kari Olavson and I want to share about my son Jacob with you. Jacob had a rare disease called early infantile epileptic encephalopathy type 17, caused by a mutation of the gene GNAO1. He was 7 years old when he passed away in 2018.

It is humbling and emotional to be able to start this letter with that information as it took 6 of his 7 years of life to find that diagnosis.

When Jacob was born, he had seizures. Those were our first clue that something was not right. Jacob's seizures were intense and hard to treat. Our second clue was his EEG testing, this is the test with many small probes on your scalp to look for seizures. Again, it was not right. His EEG showed brain activity of a premature infant, very delayed and concerning.

These abnormalities led us to his first rounds of genetic testing in his early years. For Jacob, they chose to examine genes that were known to cause epilepsy and brain abnormalities. A panel of 22 disease causing genetic mutations were examined and found nothing. No answers. More questions.

At this point in Jacob's life we were faced with the decision for him to undergo brain surgery. A corpus callosotomy that would sever the corpus collosum, the band of fibers that connects the two hemispheres of the brain, and in effect, stop seizures from traveling throughout the brain from where they were starting. Brain surgery is a big deal for a two-year-old! But, our decision was not a hard one as he was suffering and this was a glimmer of hope.

This was a scary and intense decision to make with no diagnosis. We had yet to find a case even similar to our son. He was our mystery man.

Brain surgery was a throttled success. We saw a decrease in seizures and increase in emotion and interaction with Jacob, but sadly, it only lasted a few months. Right around this time, we found out we were pregnant with our second child… would they also have seizures and disabilities and hurdles? How could we know?

We continued our journey to find a diagnosis as we knew that was how we could best help Jacob. We needed to know why. We learned about whole exome sequencing – a type of genetic testing that was much more widespread than whole genome sequencing at the time but provides less complete information – and felt it could be our answer. This would look at Jacob's entire genetic makeup and find any tiny little flaw that was hiding from us.

Unfortunately, our insurance didn't cover this kind of test and we couldn't afford to pay out of pocket for it.

We appealed. No. We appealed again. No.

Our third appeal we received a notice that our insurance was changing their policy regarding genetic testing, we could be approved if we followed some prerequisites. Thankfully at this point, their rules were hoops we had already jumped through, things like "must have had prior genetic testing" were easy to check off as we had already been on this journey for years.

I tell this story quickly but those appeals and decisions took a lot of time as anyone who has been through such a process would know. Weeks and months went by waiting for answers.

At this point in Jacob's life we had made big decisions for interventions for him to live his best quality life. He had a feeding tube placed at age 2 and a tracheostomy placed at age 4. He used a wheelchair. He needed support in every part of his life and we were doing our best to give him that.

Then finally, we were approved for whole exome sequencing and Jacob, his dad, and myself all had blood drawn to be sent away and sequenced. The test itself took a lot of time and we knew it might not even be the answer. The wait was intense.

I got the call while driving and had to pull over. I made a note in my phone, GNAO1. That was it. The gene that caused all the hurdles. All the seizures. The low muscle tone. The vision issues. The movement disorders. All of it. Our answer. Jacob was almost 6.

We learned mutations on GNAO1 were very rare. Jacob was the only person diagnosed with this disease in Minnesota. There were maybe 50 in the United States at the time and 200 in the world. I was handed a packet of information that included a few studies and medical journal submissions.

But, our biggest gift, we found other families in our boat. We had never had that before. We had never had a friend we could reach out to and say "Hey, how did your kiddo handle this?" We didn't have peers for 6 years of Jake's life.

Finally being diagnosed was the blessing of a lifetime. But, it also brought up heartbreaking questions. Did we do the right things at the right time? Did we support him the best we could? We know more now, would we have done brain surgery? Harsh medications? Other major surgeries like trach placement? And the biggest question. The one that still tugs at me most days… if we had known earlier, could we have helped him live longer than just seven years?

HF 3330 would help families in Minnesota facing an undiagnosed rare disease avoid the frustrating delays in diagnosis that lead to unnecessary medical procedures, healthcare costs, and emotional burden on families like mine.

Please support HF 3330.

Sincerely,

Kari Olavson

Children's MINNESOTA

The Kid Experts™

March 18, 2024
House Commerce Finance and Policy Committee

Dear Chair Stephenson and Committee Members,

As a clinical geneticist and Medical Director of Genomic Medicine at Children's Minnesota, I'm writing in support of HF3330 which would require coverage for rapid whole genome sequencing (rWGS) for acutely ill children. rWGS is a now well-established diagnostic molecular study that detects genetic disorders in critically ill children with unusual clinical presentations who may benefit from prompt treatment and relevant evaluations.

rWGS has quickly become the clinical standard of care for inpatients suspected to have a genetic disorder, given its higher diagnostic yield versus other, more limited clinical tests, fast turnaround time (up to about 14 days), and growing medical literature supporting its clinical utility. Unfortunately, payer coverage has remained behind, effectively limiting access to testing, and potentially contributing to increased morbidity and mortality of this high-risk inpatient population.

rWGS is currently being used in our neonatal intensive care unit, pediatric intensive care unit, and cardiovascular critical care unit. Pre- and postnatal genetic counseling is offered to all families. Of those patients who undergo rWGS, about one third are found to have a primary genetic diagnosis which may help provide a specific prognosis, initiate appropriate interventions, and potentially reduce length of stay and admission costs. It is important to note that a negative result is also helpful, as it may allow ongoing care to continue without further invasive clinical interventions which are sometimes initiated if a genetic diagnosis is suspected. It has been estimated that around 20% of total infant deaths in the United States are due to an early onset disorder with a genetic basis. More significantly, about 10-25% of children admitted to a neonatal intensive care unit may have a monogenic disorder, which may be missed due to the lack of defining features in early age and lack of insurance coverage for inpatient genetic studies. Our neonatology program takes care of more than 2300 babies each year. Accordingly, up to 575 of those neonates would benefit from rWGS. Currently, only two percent of candidate patients admitted to the neonatal intensive care unit can access rWGS primarily due to limitations in insurance coverage. This lack of access leads to delays in decision-making from the relevant inpatient teams and families when approached about the opportunity to participate in rWGS.

Please consider approving coverage for rWGS as we strive to offer care to critically ill children in Minnesota.

Sincerely,

Marcelo Vargas, MD
Medical Director
Genomic Medicine
Children's Minnesota

MINNESOTA
RARE DISEASE ADVISORY COUNCIL

March 15, 2024

House Commerce Finance and Policy Committee
Chair Zack Stephenson and Ranking Member Tim O'Driscoll
Minnesota House
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155

Chair Zack Stephenson and Ranking Member Tim O'Driscoll,

I am writing on behalf of the Minnesota Rare Disease Advisory Council to express support for HF3330 which would expand coverage of rapid whole genome sequencing (rWGS) of critically ill children admitted to the ICU/NICU. The Minnesota Rare Disease Advisory Council (RDAC) is an executive branch state agency whose mission is to improve diagnosis and care for the 1 in 10 Minnesotans living with a rare disease.
The average time to diagnosis following traditional diagnostic pathways for a rare disease patient is 7-8 years. Within that undiagnosed time frame, a rare disease patient receives an average of 2-3 misdiagnosis. In fact, the extreme delay in diagnosis is such a salient feature of the rare disease community that it is referred to the in community as the "diagnostic Odessey". In addition to the immense trauma and stress that a desperate search for a diagnosis places on families, the delay in diagnosis also increases costs to the health system significantly due to multiple visits/testing that do not result In a diagnosis, the administration of inappropriate treatments because of misdiagnosis, and the increase in hospitalizations due to an unmanaged condition. A recent NIH-led pilot study[1] examined claims data and determined that cost of rare disease care Is significantly higher for those with rare diseases compared to their non-disease age matched counterparts (Florida Medicaid claims data Indicated a PPPY cost ranging from $8,812 to $140,044 versus $2,211). While the reasons for the higher cost are complex, one of the cited contributing factors Is the delay to diagnosis.

The advances in genetic testing hold significant potential to both reduce the diagnostic Odessey as well as the cost of care. More than 85% of the roughly 10,000 rare diseases are genetic in origin, making genetic testing such as rWGS a singularly effective tool. Multiple studies done across the United States such as those conducted at Rady Children's Hospital[2] have demonstrated that incorporating rapid testing into NICUs for children with a suspected rare disease both improves diagnosis and clinical outcomes and reduces the cost of care.

We urge you to support HF3330 to ensure that children living with a complex and life-threatening condition can receive the diagnosis they deserve.

Sincerely,

Erica Barnes

[1] NIH Study Suggests People with Rare Diseases Face Significantly Higher Health Care Costs | National Center for Advancing Translational Sciences

[2] Project Baby Bear: Rapid precision care incorporating rWGS in 5 California children's hospitals demonstrates improved clinical outcomes and reduced costs of care - ScienceDirect