

Health Insurance Mandate Review

Date: January 2, 2020

Bill number: HB 2177; mandating coverage of medically necessary formulas and enteral nutrition

Review requested by: Health Insurance Reform Commission

Summary: Impact of Health Insurance Mandate

HB 2177 would mandate health insurance coverage for medically necessary formulas and enteral nutrition. Formulas and enteral nutrition are used to treat and manage the symptoms of various medical conditions by providing nutrients an individual is unable to ingest, digest or metabolize from normal food. These products are sometimes the only way an individual can absorb or utilize sufficient nutrients, and other times they are used in conjunction with a normal diet. They can be taken orally or through a feeding tube (enterally), depending on the specific condition.

Formulas and enteral nutrition are the primary treatment methods for many inherited metabolic disorders (IMDs). IMDs are rare conditions where the body cannot metabolize or process certain nutrients found in normal food. These products are also sometimes used to treat other conditions including gastrointestinal disorders, food hypersensitivities, and the inability to consume food orally. These other conditions are more prevalent than IMDs, but do not always require formulas or enteral nutrition.

The use of formulas and enteral nutrition typically eliminates adverse effects of IMDs, which when untreated can cause intellectual disabilities for children and also cause seizures, metabolic crises and possibly death throughout all stages of life depending on the specific diagnosis. Formulas and enteral nutrition also prevent intellectual disabilities in infants born to mothers with IMDs. For individuals with other conditions, formulas and enteral nutrition can prevent malnourishment and may provide relief from symptoms of many chronic conditions.

The cost of formulas and enteral nutrition for individuals without insurance coverage typically ranges from \$300 to \$2,200 a month. The cost depends on the type of formula used and the condition it is used to treat. While individuals with IMDs are likely to require these products for their lifetime, they are not typically lifetime treatments for people with other conditions and are instead typically used more episodically or for a portion of an individual's life. Medical experts who treat these individuals report that some adults without insurance coverage forgo treatment because of the cost.

HB 2177 would only affect coverage for individual and fully insured group health insurance plans. These insurance plans already cover these products to some extent, however some plans only cover these products if they are tube fed, rather than consumed orally, even though most individuals with conditions requiring formulas or enteral nutrition do not require tube feeding. Therefore HB 2177 would result in coverage for more individuals. At least 36 other states mandate at least some coverage of formulas or enteral nutrition of which most cover these products for IMDs. However, in contrast to HB 2177, none of these states mandate coverage without specifying the covered disease or disorders.

An explanation of the JLARC staff review is included on the pages that follow.

House Bill 2177 would require coverage of medically necessary formulas and enteral nutrition

House Bill 2177 would mandate that individual and fully insured group health insurance plans cover all medically necessary formulas and enteral nutrition. Formulas refer to products consumed orally, while enteral nutrition refers to products consumed through a feeding tube. They are used to meet the specific nutritional needs for individuals with conditions that prevent them from obtaining nutrients through normal food. Doctors prefer that patients receive these treatments orally rather than through a tube because it is less expensive and poses a lower risk of infection to the patient. Under HB 2177 these products would be classified as medicine and covered by insurance in the same manner as other medicines. HB 2177 requires a physician's written order for the products to be considered medically necessary, and the bill does not limit coverage to any specific diseases or conditions.

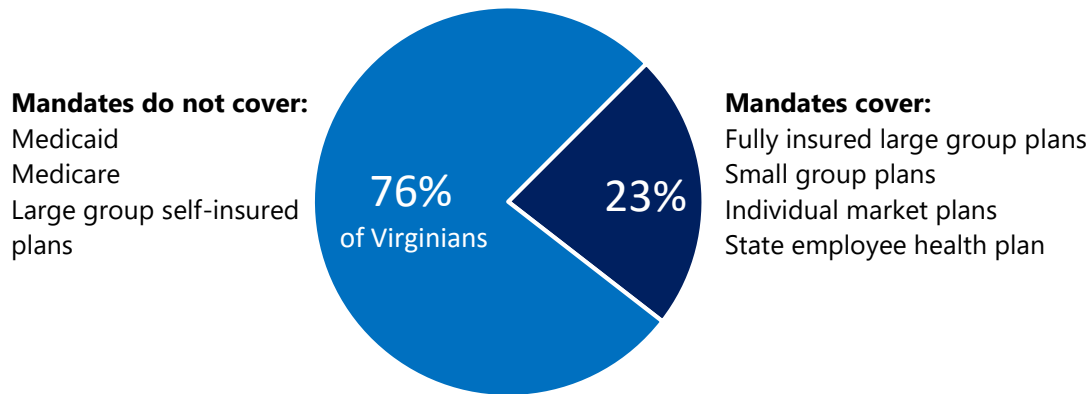
Formulas and enteral nutrition are used by individuals who are not able to get the nutrients they need through normal food because of a disease or medical condition. The U.S. Food and Drug Administration (FDA) defines these products as "medical foods."

A medical food, as defined in section 5(b)(3) of the Orphan Drug Act (21 U.S.C. 360ee(b)(3)), is "a food which is formulated to be consumed or administered enterally [in this context referring to nutrients administered both orally and via tube] under the supervision of a physician and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on recognized scientific principles, are established by medical evaluation." (United States Department of Health and Human Services, 2016).

The FDA further elaborates that medical foods are specifically formulated to provide all or some of the nutrients that the individual cannot get from food because of their disease or other condition.

Statutorily mandated health insurance benefits apply to all individual and fully insured group health insurance plans. About 1.8 million Virginians (21 percent) are covered by these types of plans (Figure 1). Additionally, in 2009 the General Assembly established that the state employee health plan, which includes about 192,000 individuals (2 percent of Virginians), will cover all health insurance mandates. There are other insurance plans that the bill would *not* cover, including large self-insured plans, which are primarily used by large employers, and publicly funded plans like Medicaid and Medicare.

FIGURE 1
Mandated health insurance benefits cover 23 percent of Virginians



SOURCE: JLARC analysis of mandated health benefits and Bureau of Insurance member data.

Over the past 11 years, six bills have proposed coverage of certain formulas and enteral nutrition for specific conditions (Table 1). The Health Insurance Reform Commission (HIRC) requested reviews of five of these bills. None of the previous attempts to establish a mandated benefit for formulas and enteral nutrition were approved by the General Assembly.

TABLE 1
Six bills covering formulas and enteral nutrition have been proposed since 2008

Year	Legislation	Coverage of :	Condition
2008	HB 615	Amino acid based elemental formulas	Gastrointestinal and hypersensitivity conditions
2008	HB 669	Amino acid based metabolic formulas Elemental formulas	Inherited Metabolic Disorders (IMD) Gastrointestinal conditions
2009	HB 2337	Amino acid based elemental formulas	Gastrointestinal and hypersensitivity conditions
2013	SB 866	Enteral formulas	Short Bowel Syndrome (SBS)
2013	SB 867	Low protein foods	Phenylketonuria (PKU)
2016	HB 601	Coverage of all treatments	Inherited Metabolic Disorders (IMD)

SOURCE: JLARC analysis of prior legislation that proposed mandated health insurance benefits for formulas and enteral nutrition in Virginia.

Formulas and enteral nutrition are the primary treatment for inherited metabolic disorders

Formulas and enteral nutrition are the most effective treatment for many individuals with IMDs. For individuals with these conditions the body is unable to metabolize or process a particular nutrient, and when this is left untreated, chemicals that would normally be processed build up, causing adverse effects on the individual. Formulas and enteral nutrition enable individuals with IMDs to develop and

function normally throughout their lifetime. These products provide them the nutrients they are unable to get from normal food while also preventing potential adverse effects. The cost of formulas and enteral nutrition to treat individuals with IMDs can range from \$500 to \$2,000 per month depending on the product required to treat the individual's condition.

Inherited metabolic disorders are rare

IMDs are rare, genetic conditions. In Virginia, about 33 infants on average are born each year with an IMD. Medical experts at three medical centers that treat the majority of Virginians with IMDs estimate that between 500 and 600 (.008 percent) Virginians are currently being treated for an IMD. Phenylketonuria (PKU) and Very long-chain acyl-CoA dehydrogenase deficiency (VLCAD) are the most common types of IMDs in Virginia that require formula or enteral nutrition. Formulas are commonly used to treat IMDs but not all IMDs require the use of formulas. Most but not all IMDs can be detected through Virginia's newborn screening program. Therefore, the number of Virginians born each year with an IMD may be higher.

Formulas and enteral nutrition are critical to the healthy development of individuals with IMDs

According to medical experts, formulas and enteral nutrition are the most effective lifetime treatment methods for the majority of IMDs. While the required formulas and enteral nutrition vary based on the IMD, they all provide individuals with IMDs the nutrients they need while preventing the build-up of chemicals that occur due to the body's inability to metabolize or process a particular nutrient.

Individuals who do not receive medically necessary formulas or enteral nutrition can face severe health risks that vary depending on age and the specific IMD. In the case of PKU, the most common IMD, children who do not receive medical formula from birth to approximately 10 years of age, will develop intellectual disabilities and could also experience seizures. As the individual ages, going without treatment can make processing information, focusing, and mood stability more difficult. Pregnant women with PKU who do not access formulas for PKU by eight weeks of pregnancy have a high risk of their child developing an intellectual disability (93 percent chance) or having a permanent heart defect. For other IMDs, lack of access to medical formulas can cause stroke, seizures, or death.

Formulas and enteral nutrition are daily, lifetime treatments for IMDs

The majority of individuals with an IMD require formula or enteral nutrition daily throughout their life. The specialized formula or enteral nutrition product prescribed depends on a patient's specific IMD and the nutrients he or she is unable to metabolize from a regular diet. Most individuals with IMDs take formulas orally. Only a small fraction of patients require a feeding tube because of another medical condition that impairs their ability to swallow.

Formulas and enteral nutrition for IMDs are usually not nutritionally complete, requiring individuals to also consume at least some regular food. From birth to the time a child is able to eat normal food, these products are taken in conjunction with a small amount of normal baby formula or breast milk. Once children are able to consume normal food, formula and enteral nutrition are typically taken alongside a strict, vegetable-based diet.

With these required diet restrictions, individuals cannot meet their nutrition needs without the use of formulas or enteral nutrition. Therefore, formulas and enteral nutrition are the primary source of *nutrition* that the individual is unable to get from their normal food. However, formulas are not typically the primary source of *calories*. Formulas usually only provide between 9 percent and 42 percent of an individual's caloric needs.

Individuals' nutritional needs will increase as they grow, increasing the amount of formula or enteral nutrition needed. The quantity of formula or enteral nutrition needed typically stabilizes in the teenage years.

There are a few alternative or complementary treatments for some IMDs, but they are rarely used because of high costs and potential side effects. Two pharmaceutical treatments have been developed in recent years to treat PKU. One is an injection that eliminates the need for formulas or enteral nutrition that can be prescribed only for individuals 18 years or older. The other treatment is a pill that enables an individual to eat a less restrictive diet, but does not eliminate the need for formula or enteral nutrition and is not effective for all persons with PKU. For individuals whose enzyme deficiency is found in their liver, a liver transplant can be performed to cure the IMD, but this is rarely done because of the risks associated with organ transplants.

The cost of formulas and enteral nutrition to treat IMDs range from \$500 to \$2,000 per month, causing some adult patients to forgo treatment

Many individuals with IMDs forgo treatment if their insurance does not cover formulas or enteral nutrition, according to experts at three medical centers that treat the majority of patients with these diseases. As the majority of individuals with IMDs do not require enteral nutrition (tube feedings), many of them do not have health insurance coverage because health insurance companies do not typically cover formulas (oral feedings) (see page 8 for a full discussion of current health insurance coverage of formulas and enteral nutrition). The cost of formulas and enteral nutrition for adults with IMDs is typically between \$500 and \$2,000 per month. The cost varies depending on the specific formula or enteral nutrition required to treat each IMD and the amount required. The least expensive products are powders that cost between \$500 and \$700 per month. Products that are easier to consume, such as ready-to-drink and flavored formulas, tend to be more expensive, ranging from \$700 to \$1,500 per month. Specialized products that not only provide necessary nutrition but also limit some of the symptoms of PKU cost up to \$2,000 per month. Medical experts have found that the easier-to-consume products are better tolerated by patients, which makes them more likely to adhere to the treatment throughout their life. It is typically less costly to treat children with formulas and enteral nutrition because they consume less each day.

Formulas and enteral nutrition can be used to treat other conditions

Formulas and enteral nutrition are sometimes used to treat conditions other than IMDs. The use and effectiveness of these products depend on the medical condition. The cost of formulas and enteral nutrition for these other conditions can range from \$300 to \$2,200 per month, but not all patients would require treatment throughout their lives, lowering the long-term costs. HB 2177 does not

restrict coverage of formulas or enteral nutrition to certain conditions, so coverage would include all of these other conditions.

Other conditions sometimes treated with formulas and enteral nutrition are more prevalent than IMDs

Other conditions that may require formulas or enteral nutrition tend to be more common than IMDs. However, not all patients with these diseases require formulas or enteral nutrition. These conditions fall into one of three broad categories: gastrointestinal and malabsorption disorders, hypersensitivity conditions, and cases where an individual is unable to consume food orally (Table 2).

TABLE 2
Examples of other conditions that can be treated with formulas and enteral nutrition

	Disease / Disorder	Description	Prevalence
Inability to consume food orally	<i>Dysphagia</i>	Interference with the ability to swallow. Examples of conditions that cause this include strokes, head and neck cancer, and cerebral palsy.	4,000 : 100,000
	<i>Anorexia Nervosa</i>	Pathologic fear of gaining weight	3,000 : 100,000
Gastrointestinal and malabsorption disorders	<i>Crohn's Disease</i>	Malabsorption disorder caused by chronic inflammation in the GI tract.	50 : 100,000
	<i>Cystic Fibrosis</i>	A hereditary disease where the body produces a mucus that affects the lungs and the digestive system. Chronic lung infections and pancreatic insufficiency result in fat and protein malabsorption.	10 : 100,000
	<i>Short Bowel Syndrome (SBS)</i>	Malabsorption disorder caused by a shortened small intestine resulting from disease or surgery.	0.5 : 100,000
Hypersensitivity conditions	<i>Non-IgE (Non-Immunoglobulin-E) food allergies in children</i>	Allergies involving the gastrointestinal tract and skin which occur hours to days after ingesting the food. Allergies to cow's milk and soy are the most common causes of non-IgE allergies in infants.	Varies
	<i>Eosinophilic Disorders</i>	Above normal amount of white blood cells that typically fight parasites (eosinophils) but are elevated in allergic diseases, allergies, asthma and infections. Eosinophils can infiltrate nearly any tissue and lead to inflamed tissue and organ damage. Food allergies are often the catalyst.	Varies

SOURCE: JLARC analysis of medical literature and medical expert interviews.

NOTE: The prevalence of eosinophilic disorders varies but 50 out of 100,000 individuals have eosinophilic esophagitis, which is one example of this type of disorder.

The effectiveness of treatment varies depending on the condition

The effectiveness of treating these other conditions with formulas or enteral nutrition varies. Short bowel syndrome (SBS) and eosinophilic disorders are two examples of conditions with significant evidence showing that formulas and enteral nutrition are effective treatments. Observational studies of enteral nutrition for SBS demonstrated improvements in nutrient absorption, growth and the reduction of symptoms for infants, children, and adults. Clinical trials of eosinophilic esophagitis (EE) patients have found formulas to be an effective treatment for children and adults with these conditions, and they can also help determine which foods may trigger the condition.

Anorexia nervosa is an example of a condition that can be treated with enteral nutrition, but the efficacy is less clear. Clinical studies of all age groups found that body mass index (BMI) and body weight improved with enteral nutrition. This was true in the short term when enteral nutrition was

compared to a normal oral diet, but in the long term the impact on recovering from the disease was inconsistent.

Treatment protocols depend on the purpose of treatment and the age of the patient

Formulas and enteral nutrition treatments vary depending on the purpose of treatment, the amount of product administered, and the age of the patient (Table 3). When formulas and enteral nutrition are used to provide nutrients because an individual cannot eat solid food, like for dysphagia and infants with non-IgE food allergies, the treatment is used until the individual is able to eat solid food and/or eliminate the allergen. In these cases, the products are the sole source of nutrition. In other situations, individuals are able to consume normal food but need additional nutrients from formulas, like for patients with cystic fibrosis or SBS. In cases where these products are used to alleviate symptoms of a condition, like for individuals with Crohn's disease, treatment is episodic but can be repeated throughout an individual's lifetime as symptoms reappear. In these cases the products are typically used in conjunction with normal food. For eosinophilic disorders caused by food hypersensitivities, formulas or enteral nutrition are typically used as the sole source of nutrition in infants and children to reset the body, in the hope that foods can slowly be reintroduced to the diet and that the irritant will be identified.

Formulas and enteral nutrition for these conditions are usually used as a primary treatment for *infants and children*. Formulas and enteral nutrition are not typically a primary treatment method for adolescents and adults.

The cost of formulas and enteral nutrition for other conditions is comparable to those used for IMDs but likely lower in the long term

The cost of formulas and enteral nutrition to treat these other conditions can be between \$300 and \$2,200 per month depending on the type of product, the form it comes in, and the palatability of the products. While the costs are similar to formulas and enteral nutrition used for IMDs, the long-term costs are typically lower because treatment for other conditions is typically episodic, or for a portion of a patient's life.

TABLE 3
Formula and enteral nutrition treatment protocols vary widely for other conditions

Condition	Purpose and length of formula and enteral nutrition treatment	Sole source of nutrition during treatment	Age of use
<i>Non-IgE (Non-Immunoglobulin-E) food allergies</i>	Treatment is used to alleviate allergy symptoms and provide nutrients the individual cannot safely ingest through normal foods. Formula or enteral nutrition are needed for infants until they are able to eat allergen-free solid food.	Yes	Typically up to 2 years of age
<i>Dysphagia</i>	Enteral nutrition (tube feeding) is used to provide nutrients for individuals who are unable to chew or swallow solid foods, or are unable to safely swallow foods without inhaling them into their lungs. The length of treatment can range from weeks to the remainder of the individual's life.	Yes	All age groups
<i>Crohn's Disease (intestinal inflammation)</i>	Treatment is used to alleviate intestinal inflammation which causes abdominal pain, intestinal bleeding, diarrhea and/or vomiting. Treatment with enteral nutrition typically lasts eight and 12 weeks. Treatment may be repeated if and when symptoms reappear.	Sometimes	All age groups
<i>SBS</i>	Individuals use the treatment as the only source of nutrition until they are able to transition to normal food.	Sometimes	All age groups
<i>Cystic Fibrosis</i>	Treatment is used to provide needed nutrition that the individual cannot get through normal diet. These products are typically the sole source of nutrition until the individual is able to transition to solid food through normal development and take medications which can improve intestinal absorption. Sometimes formulas and enteral nutrition continue to be used along with a normal diet when individuals are not satisfying their nutritional needs with normal food.	Sometimes	Typically up to 2 years of age
<i>Anorexia Nervosa</i>	Treatment is used to provide sufficient nutrition with treatment varying from weeks to months.	Sometimes	All age groups
<i>Eosinophilic disorders</i>	Treatment is used to alleviate symptoms and to diagnose the cause of the disorder. Treatment varies from weeks to months.	Sometimes	Children (0 – 18 years)

SOURCE: Medical literature and medical expert interviews.

NOTE: Other than for dysphagia patients, formulas and enteral nutrition are an *alternative* treatment method for adults.

Coverage of formulas and enteral nutrition varies in Virginia and other states

All of Virginia's individual and fully insured small group health plans cover formulas and enteral nutrition to some extent, but coverage varies. The differences in coverage are based on (i) whether these products are administered orally or via tube and (ii) whether they are the primary source of nutrition. HB 2177's impact on the individual and fully insured group plans would vary depending on the extent to which a plan already covers formulas and enteral nutrition.

Along with health insurance plans, Virginia's public programs (Medicaid and Medicare) cover formulas and enteral nutrition in specific circumstances, and the majority of other states have a health insurance mandate that covers formulas and enteral nutrition.

Virginia insurance plans base coverage of formulas and enteral nutrition on method of administration and whether they make up patients' primary source of nutrition

The Patient Protection and Affordable Care Act requires that each state establish a benchmark health insurance plan that sets the minimum coverage for all individual and small group plans. Under Virginia's benchmark plan, formulas and enteral nutrition are covered when they are the primary source of nutrition for individuals with IMDs, metabolic abnormalities, or some severe allergies.

"Your Plan covers special medical formulas which are the primary source of nutrition for covered persons with inborn errors of amino acid or organic acid metabolism, metabolic abnormality or severe protein or soy allergies. These formulas must be prescribed by a physician and required to maintain adequate nutritional status." (Virginia benchmark plan, Anthem Premier DirectAccess PPO plan, 2019).

While all individual and small group fully insured health plans cover formulas and enteral nutrition in some way, the coverage is inconsistent across health plans (Table 4). Some plans cover both formulas (taken orally) and enteral nutrition (taken via tube), while others cover only enteral nutrition. However, many of these conditions do not require tube feedings, so patients who can take these oral products may not have coverage for the formulas they need. In response, medical experts said through interviews with JLARC staff that they sometimes prescribe tube feeding for patients when not medically necessary even though tube feeding carries a higher risk of infection, to ensure that the product will be covered by the patients' insurance. HB 2177 would expand the coverage of formulas and enteral nutrition to both oral and tube feeding.

Insurance policies define "primary source of nutrition" differently. Some insurance plans cover formulas and enteral nutrition only when they make up at least half of an individual's caloric needs. Most formulas and enteral nutrition products used to treat IMDs provide between 9 and 42 percent of the individual's caloric needs. These plans would not cover formulas and enteral nutrition that are used as patients' primary source of protein, fats or carbohydrates, but not calories. HB 2177 would expand the coverage of formulas and enteral nutrition to all medically necessary treatments, regardless of whether they are the primary source of nutrition.

TABLE 4

Health insurance coverage of formulas and enteral nutrition varies by plan

Insurance plan	Interpretation of primary source of nutrition	Coverage of oral (formulas) and tube (enteral nutrition) feeding
A	No specific definition but coverage excludes baby formula and other supplemental foods that are not required based on dietary restrictions.	Both oral and tube feeding
B	Enteral nutrition must account for at least 50% of an individual's caloric needs	Tube feeding only
C	Adequate nutrition must not be possible through normal diet and/or oral supplements.	Tube feeding only
D	Do not require formulas and enteral nutrition to be a primary source of nutrition	Both oral and tube feeding (for infants up to 12 months old with an IMD)

SOURCE: JLARC analysis of Virginia fully insured large group, small group, and individual health plans and the Bureau of Insurance health insurance survey.

Three programs through the Virginia Department of Health can help pay for formulas and enteral nutrition for eligible individuals

Some individuals who do not have insurance coverage may qualify for one of three public programs that pay for formula and enteral nutrition: i) Virginia's Women, Infants, and Children program (WIC), ii) the Care Connection for Children program, and iii) the Metabolic formula and food program. Each of these programs have their own eligibility criteria (Table 5). All three programs provide coverage for individuals with IMDs if they meet the other eligibility criteria, and two of them cover individuals with other conditions that require formulas or enteral nutrition. All three are administered by the Virginia Department of Health.

TABLE 5

The Virginia Department of Health administers three programs that cover formulas and enteral nutrition for low-income individuals

	Virginia Women, Infants and Children program (WIC)	Care Connection for Children	Metabolic formula and food program
Who	Children up to age 5 Pregnant and postpartum mothers	Birth to 21 years	21 years or older
Income eligibility	At or below 185% FPL	At or below 300% FPL and underinsured or uninsured	At or below 300% FPL and uninsured
Conditions covered	Any conditions requiring formulas or enteral nutrition	Conditions screened for through newborn screening	Inherited metabolic disorders
Funding	Federal	Federal	Special reserves from newborn screening

SOURCE: JLARCs interviews with VDH staff and analysis of VDH documentation (2019).

NOTE: Newborns are screened for 31 conditions, 23 of which are IMDs; others include cystic fibrosis and critical congenital heart disease.
FPL: federal poverty level

The majority of other states have a mandated benefit for formulas and enteral nutrition

The majority of other states (36) mandate at least some coverage of formulas and enteral nutrition but limit coverage to certain conditions. Thirty-five of those states cover formulas and/or enteral nutrition to treat at least some IMDs, and 21 do so for other conditions. In contrast to HB 2177, none of these state mandates cover formulas and enteral nutrition without specifying the covered diseases or disorders.

Some states, including Virginia, have public programs that help cover costs of formula and enteral nutrition that are not covered by health insurance plans. Nebraska, a state without a mandated benefit, partially reimburses individuals with certain conditions for enteral nutrition. Additionally, Kentucky, a state with a mandated benefit for both IMDs and other conditions, established a metabolic food and formula program that provides enteral nutrition to individuals without insurance or who have been denied coverage. Similarly, Virginia has three income contingent programs administered by the Virginia Department of Health that cover the costs of formulas and enteral nutrition for certain conditions when they are not covered through insurance or an alternative program.

Glossary and Abbreviations

Glossary

Enteral nutrition: delivering all or part of an individual's nutrients through the GI tract via tube for individuals who are unable to get appropriate nutrition from normal food because of a medical condition.

Eosinophilic esophagitis: an eosinophilic disorder (buildup of white blood cells) where the esophagus narrows and becomes rigid and tight, making it difficult to swallow.

Formulas: delivering all or part of an individual's nutrients through the GI tract orally for individuals who are unable to get appropriate nutrition from normal food because of a medical condition.

Medical foods: a food that is consumed through the gastrointestinal tract under a physician's supervision and that is intended for particular dietary management of a disease or condition that has specific nutritional requirements. The Food and Drug Administration recognizes medical foods as those that are both consumed orally and through a feeding tube. This includes both formulas and enteral nutrition.

Very long-chain acyl-CoA dehydrogenase deficiency: an IMD where the body is unable to metabolize certain fats and is unable to convert them into energy.

Phenylketonuria: an IMD where the body is unable to process the substrate phenylalanine, an essential amino acid. Amino acids make up proteins, which are commonly found in food.

Abbreviations

CHKD	Children’s Hospital of the King’s Daughters
EE	Eosinophilic Esophagitis
GI	Gastrointestinal
IMD	Inherited metabolic disorders
MCAD	Medium-chain acyl-CoA dehydrogenase deficiency
PKU	Phenylketonuria
SBS	Short Bowel Syndrome
UVA	University of Virginia
VCU	Virginia Commonwealth University
VLCAD	Very long-chain acyl-CoA dehydrogenase deficiency
WIC	Women, Infants and Children program

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