ProvideGx®

Premier Annual Report on Progress in Eliminating Drug Shortages

Collaboration with Health System Leaders Yields Rapid Results

Executive Summary

According to the University of Utah Drug Information Service, hundreds of critical, lifesaving drugs have been in and out of shortage over the past decade. These shortages compromise the quality and safety of care, as well as increase costs. Moreover, these shortages appear to be lasting longer - in some cases more than eight years.

Most drugs in shortage are older, low-cost generic products. Because they are low cost, mature products, these drugs do not generate the blockbuster profits necessary for manufacturers to fund the ongoing investments required to maintain a market position, enter a new therapeutic category or invest in manufacturing quality and redundant capacity necessary for continuous supply. As a result, even products used daily for essential care may only be supplied by one or two manufacturers, creating a fragile supply chain that isn't strong enough to handle variable market demand.

Recognizing the multi-faceted issues that lead to drug shortages, Premier has a successful record of remediating them, most recently with the creation of its ProvideGx® program in 2019. Built on the backbone of Premier’s 15-year work to find solutions to drug sourcing challenges, ProvideGx's mission is to help ensure health systems have continuous and affordable access to shortage medications, as well as those in categories that lack competition.

Today, Premier’s programs have grown to represent nearly 1,600 hospitals, aggregating $676 million in generics spend. Partnering with 25 manufacturer partners, Premier has been able to reliably supply nearly 150 shortage drugs by National Drug Code, shipping out 11.4 million units of shortage drugs to facilities across the nation. In 2019 alone, Premier added 18 new products to its portfolio, including metoprolol; cysteine hydrochloride; sodium bicarbonate; diphenhydramine; hydromorphone; lidocaine; morphine; thiamine; phytonadione injection; vincristine; and emergency, pre-filled syringes of calcium chloride, epinephrine, sodium bicarbonate, atropine sulfate, dextrose and lidocaine.

This report provides a detailed overview of the economic causes of drug shortages, and the multi-faceted strategies employed by Premier to successfully resolve them.
Background: A Pervasive Problem for Patients and Providers

Since the year 2000, drug shortages have been a major challenge for hospitals, compromising their ability to provide lifesaving and urgent care to critically ill patients.

As a result of pervasive shortages, patients may experience delays in receiving necessary care, receive alternative treatments that are not as effective or may have to forgo treatment altogether. According to a 2019 survey conducted by the American Hospital Association (AHA), the Federation of American Hospitals (FAH) and the American Society of Health-System Pharmacists (ASHP), 56 percent of hospitals reported that they changed patient care or delayed therapies because of drug shortages, and another 36.6 percent said they were forced to reschedule non-urgent or emergent procedures. Another survey conducted by the American College of Emergency Physicians found that 90 percent of emergency room doctors routinely lack access to critical medicines.

Drug shortages and the compromised care that results from them have been linked directly to adverse outcomes and deaths. For children diagnosed with acute myeloid leukemia, one shortage of the oncology drug cytarabine caused almost half of all newly-diagnosed cases to delay their treatment by two or more weeks. Another shortage of norepinephrine, a front-line drug used to provide emergency treatment of septic shock, increased in-hospital deaths by 3.7 percent as a result of the use of a less effective medication. Equally important, drug shortages also increase the likelihood of drug errors and adverse events as a result of dosing changes and medication substitutions that alter well-established care protocols and standing orders.

Drug shortages also pose a threat to hospital operations, as pharmacists, physicians, nurses and others who provide urgent care for patients must instead devote time locating scarce supplies, researching alternative options, tracking inventories and reconfiguring procedures. All this added effort comes at a price to patients, payers and providers, with studies estimating that drug shortages cost hospitals $359 million each year in added labor.

Costs are also incurred in obtaining therapeutic alternatives, such as buying a more expensive branded drug in lieu of a low-cost generic in shortage. According to the AHA, FAH and ASHP report, almost 80 percent of hospitals said drug shortages resulted in increased spending to a moderate or large extent.

Drug shortages are triggered by a variety of events, including natural disasters or manufacturing quality problems that take producers offline for weeks or months at a time. Some shortages occur when manufacturers have difficulty finding sources of raw materials, others when there is a sudden surge in demand due to a disease outbreak or seasonal spike in cases, such as flu season. However, the October 2019 FDA report on the root causes of drug shortages points overwhelmingly to economic factors as the predominant cause triggering shortages and their lengthy duration.
An Unhealthy Market

Most drugs in shortage are older, low-cost generic products\(^{16}\). Because they are low cost, mature products, these drugs do not generate the blockbuster profits that are necessary for manufacturers to fund the ongoing investments required to maintain a market position, enter a new therapeutic category or invest in manufacturing quality and redundant capacity necessary for continuous supply – even in categories where demand is strong\(^{17}\).

As a result, even products used daily for essential care may only be supplied by one or two manufacturers\(^{18}\), creating a fragile supply chain that isn’t strong enough to handle variable market demand. The bottom line is an unhealthy market that quickly crumbles when there’s a disruption, producing dire consequences.

As an example, consider the ongoing shortage of Bacillus Calmette-Guerin (BCG), a drug used to spur the body’s immune system to fight off certain types of bladder cancer.

BCG is a complicated drug to produce; it’s a bacteria that takes three months or more to cultivate in a rare, special breed of potato\(^{19}\). It’s highly effective, but generates low margins, with a list price of $157 for a six-week dose\(^{20}\). In 2012, there were two makers of the drug. That same year, the FDA inspected one of the drug makers and found sanitation issues at the manufacturing plant, including mold and birds nesting in air-intake systems\(^{21}\). Shutting down the plant left a single supplier for the entire market, and at BCG’s low price, no additional competitors have stepped forward to fill the gap. Even with the remaining manufacturer increasing production, shortages persist today\(^{22}\) – eight years later.
In 2017 the Pew Charitable Trusts conducted interviews with pharmaceutical manufacturers to determine the economic factors that influence a company's decision to invest in reducing the risk of shortages. In addition to the quality issues cited in the case of BCG, Pew uncovered additional factors that directly lead to increased shortage risks, including:

- Market withdrawals due to the introduction of new, low-cost competitors;
- Financial decisions to focus on higher-margin products for greater profitability and shareholder return;
- Little to no investment in backup manufacturing or dual-source suppliers, except in cases where a clear return on investment could be demonstrated;
- Lack of guaranteed volume and long-term contracts that would justify market entry or investment in redundancies;
- Limited insights into future product demand that would enable a company to accurately forecast financials and justify investments; and
- Regulatory burdens associated with entering a new market, expanding manufacturing capacity or upgrading equipment. In fact, the FDA continues to have a multi-year drug approval backlog that dis-incorrects market entry and investment, particularly for older, lower-cost products.

Recognizing the dangers of hospital drug shortages and the risks inherent in concentrating sources of supply to just a few companies, the FDA has made great strides to encourage additional manufacturers to enter the market. For instance, the agency has fast-tracked approvals in shortage categories, increasing the number of drugs on the market by nearly 17 percent, while cutting average reviews of new drug applications by six months. At the same time, the FDA began publishing a list of drugs that are off patent but lacking generic competition, giving manufacturers a clear set of opportune targets.

Though helpful, these efforts have not produced a permanent fix to nation's drug shortage problem or the flawed economic model that often triggers them.
Recognizing the multi-faceted issues that lead to drug shortages, Premier has a successful record of remediating the flaws in the economic model, most recently with the creation of its ProvideGx® program in 2019. Built on the backbone of Premier’s 15-year experience creating solutions to shared drug sourcing challenges, ProvideGx’s sole mission is to help ensure health systems have continuous and affordable access to shortage medications, as well as those in categories that lack competition.

ProvideGx® offers a vehicle for Premier to invest in innovative new business models and partnerships to address drug shortages, including partnering with quality generic drug manufacturers that can supply shortage products. The program seeks to combat shortages by fundamentally altering the economic dynamics that plague the generics market and put supplies at risk.

The way ProvideGx® works is simple

Health systems partner with Premier to aggregate their spending with that of hundreds of other hospitals. Those hospitals work collaboratively to identify priority shortage products based on transparent and well-defined criteria:

- in active shortage today, particularly those that are on the FDA or the ASHP shortage lists, and preferably both;
- off patent, but lack generic competition, thus making them susceptible to shortages and pricing volatility; and,
- off patent, but have fewer than three generic competitors, thus making them susceptible to shortages and pricing volatility in the future.

Once products are selected, Premier negotiates directly with manufacturers to enter or re-enter the market and/or increase production. As an incentive, ProvideGx® guarantees that its members will purchase 65 percent or more of their drug volume from the chosen manufacturer, with long-term, three- to five-year commitments. This helps attract high-quality suppliers to participate in categories where they otherwise would not, providing a long-term return on the investments necessary to build out additional/ redundant production capacity and safety stock. In exchange, health systems get a guaranteed supply at a fair price. And, most importantly, patients get access to the medications they need in a timely manner.

In addition, ProvideGx® is also prepared to invest capital to co-fund manufacturers’ development of affordable products that address specific market needs and directly secure contracts for active pharmaceutical ingredients to ensure a continuous supply.

All decisions for drug selection and manufacturer partnerships are made by the members of the program, which include 20 of the nation’s leading health systems and buying collaboratives.
Delivering Results

From 2019-2020, Premier’s drug shortage solutions delivered demonstrable results for member participants and the patients whom they serve. Today, Premier’s programs have grown to more than 100 health systems representing nearly 1,600 hospitals, aggregating $676 million in generics spend. Partnering with 25 manufacturer partners, Premier has been able to reliably supply nearly 150 shortage drugs by National Drug Code, shipping out 11.4 million units of shortage drugs to facilities across the nation. In 2019 alone, Premier added 18 new products to its portfolio, almost all of which were on the shortage list at the time of launch, with a pipeline of 50 additional shortage drugs that represent more than 100 individual presentations that are absolutely vital to patient care.

Drug Shortage Solutions at Scale

Premier’s drug shortage programs aggregate

$676 million in total generics spend from nearly 1,600 hospitals with 15.3 million annual discharges representing about 42% of all hospital stays.
### 2019 – A Record of ProvideGx Partnerships

<table>
<thead>
<tr>
<th>Drug</th>
<th>Indications</th>
<th>Manufacturer</th>
<th>Launch date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metoprolol injection</td>
<td>A lifesaving blood pressure medication often used to treat hypertensive emergencies, such as heart attacks.</td>
<td>Baxter Healthcare Corporation</td>
<td>Feb. 5, 2019</td>
</tr>
<tr>
<td>Injectable thiamine</td>
<td>Nutritional supplement used to treat or prevent vitamin B1 deficiency. The drug provides nutrition to critically ill patients such as the elderly and those with chronic diseases like HIV or renal failure.</td>
<td>Fresenius Kabi</td>
<td>May 15, 2019</td>
</tr>
<tr>
<td>Diphenhydramine</td>
<td>Antihistamine used to save the lives of those experiencing deadly allergic reactions.</td>
<td>Fresenius Kabi</td>
<td>May 15, 2019</td>
</tr>
<tr>
<td>Lidocaine</td>
<td>Analgesic administered under the supervision of a healthcare provider, generally to help surgeons prep patients for critical surgeries.</td>
<td>Fresenius Kabi</td>
<td>May 15, 2019</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>A schedule II opioid pain medication administered by hospital professionals to provide relief to people that are in severe pain, such as burn victims, trauma cases and cancer patients.</td>
<td>Fresenius Kabi</td>
<td>May 15, 2019</td>
</tr>
<tr>
<td>Morphine sulfate</td>
<td>A schedule II opioid pain medication administered by hospital professionals to provide relief to people that are in severe pain, such as burn victims, trauma cases and cancer patients.</td>
<td>Fresenius Kabi</td>
<td>May 15, 2019</td>
</tr>
<tr>
<td>Cysteine hydrochloride injection</td>
<td>Indicated to meet the nutritional needs of newborn infants requiring total parenteral nutrition (TPN), as well as adult and pediatric patients with severe liver disease.</td>
<td>Exela Pharma Sciences, LLC</td>
<td>July 2, 2019</td>
</tr>
<tr>
<td>Sodium bicarbonate injection</td>
<td>Used for urgent treatment of cardiac emergencies, such as cardiac arrest, heart attacks, strokes and other life-threatening emergencies. The product is also used to treat excessive acid or potassium in the blood stream, dehydration and certain drug overdoses.</td>
<td>Exela Pharma Sciences, LLC</td>
<td>July 23, 2019</td>
</tr>
<tr>
<td>Drug Name</td>
<td>Description</td>
<td>Manufacturer</td>
<td>Date</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Phytonadione injection</td>
<td>A vitamin K replacement used to treat or prevent bleeding and spur coagulation. It is often used to undo the effects of certain blood thinners.</td>
<td>Amphastar Pharmaceuticals, Inc.</td>
<td>October 8, 2019</td>
</tr>
<tr>
<td>Calcium chloride (pre-filled emergency syringe)</td>
<td>Used to revive patients experiencing cardiac emergencies, as well as treat muscle spasms and certain nutritional deficiencies.</td>
<td>Amphastar Pharmaceuticals, Inc.</td>
<td>October 8, 2019</td>
</tr>
<tr>
<td>Epinephrine (pre-filled emergency syringe)</td>
<td>Indicated for the emergency treatment of cardiac arrest, deadly allergic reactions, as well as relieve bronchospasm caused by acute asthmatic attacks.</td>
<td>Amphastar Pharmaceuticals, Inc.</td>
<td>October 8, 2019</td>
</tr>
<tr>
<td>Sodium bicarbonate (pre-filled emergency syringe)</td>
<td>Used for urgent treatment of cardiac emergencies, such as cardiac arrest, heart attacks, strokes and other life-threatening emergencies. The product is also used to treat excessive acid or potassium in the blood stream, dehydration and certain drug overdoses.</td>
<td>Amphastar Pharmaceuticals, Inc.</td>
<td>October 8, 2019</td>
</tr>
<tr>
<td>Atropine sulfate (pre-filled emergency syringe)</td>
<td>Used to provide emergency care for patients poisoned by toxins or chemical nerve agents.</td>
<td>Amphastar Pharmaceuticals, Inc.</td>
<td>October 8, 2019</td>
</tr>
<tr>
<td>Dextrose (pre-filled emergency syringe)</td>
<td>Restores blood sugar levels and is used to treat diabetic patients in acute insulin shock.</td>
<td>Amphastar Pharmaceuticals, Inc.</td>
<td>October 8, 2019</td>
</tr>
<tr>
<td>Lidocaine (pre-filled emergency syringe)</td>
<td>Analgesic administered under the supervision of a healthcare provider, generally to help relieve pain or cause numbness.</td>
<td>Amphastar Pharmaceuticals, Inc.</td>
<td>October 8, 2019</td>
</tr>
<tr>
<td>Vincristine</td>
<td>A chemotherapy drug primarily used to treat childhood cancers such as acute leukemia, Hodgkin’s and non-Hodgkin’s lymphoma, thyroid cancer and brain tumors, as well as certain blood disorders.</td>
<td>Pfizer, Inc.</td>
<td>December 17, 2019</td>
</tr>
<tr>
<td>Ibutilide fumarate</td>
<td>An anti-arrhythmic heart medication used to treat atrial fibrillation or atrial flutter.</td>
<td>Pfizer, Inc.</td>
<td>December 17, 2019</td>
</tr>
</tbody>
</table>
**Broad-based Innovations**

In addition to reliably supplying vital medications at a fair price, the ProvideGx model has also solved for other, downstream supply chain problems that can exacerbate or cause shortages, even when additional sources of supply have been added to the market.

<table>
<thead>
<tr>
<th>Market Realities &amp; Critical Success Factors</th>
<th>The ProvideGx Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>340B</strong>: Shortages are often exacerbated for 340B covered entities because the regulators overseeing the program prevent covered entities from purchasing private label drugs, which is how many industry organizations attempt to remediate drug shortages.</td>
<td>All ProvideGx drugs are sold under the original manufacturer label and qualify for inclusion in the 340B program, at the discounted price.</td>
</tr>
<tr>
<td><strong>Distribution</strong>: When products go into shortage, drug distributors implement an allocation system to ensure supply for existing customers and prevent hoarding. Allocations are generally set based on account size and historic purchasing volume. If a provider is not an existing customer, lacks a purchase history for the product or is a customer of insufficient size, they can be locked out of the allocation, which can cause regional shortages.</td>
<td>ProvideGx products do not go through the traditional distribution channels and are instead fulfilled through a distributor that is partially owned by Premier. As a result, products can be “earmarked” for program participants first, regardless of prior history with the distributor, to ensure ProvideGx members are given priority before supplying the general market.</td>
</tr>
<tr>
<td><strong>Transparency</strong>: An inherent root cause of shortages is reliable access to active pharmaceutical ingredients (APIs) and raw materials. In addition, understanding the FDA inspection history of the manufacturing facility is critical to an overall risk assessment, with those that have clean records given preference because they are less likely to experience a quality issue.</td>
<td>ProvideGx requires transparency for the full supply chain, including sources of API, manufacturing sites and FDA inspection records, from all partners.</td>
</tr>
</tbody>
</table>
**Impacting Lives**

The success of Premier’s drug shortage solutions go beyond mere numbers. While the business model and the scale of the program are important, what really matters are the patients whose lives have been demonstrably improved as a result of the care teams’ access to these therapies.

**Safer Care for Newborn Babies**

Seriously ill, premature or babies born with congenital health issues often have difficulty feeding and absorbing nutrients through their gastrointestinal tract. In these cases, total parenteral nutrition (TPN) is required. One of the critical components of that nutritional cocktail is cysteine hydrochloride, an amino acid that encourages growth and reduces the chances of babies developing liver disease and brittle bones.

However, cysteine hydrochloride went into widespread shortage in 2015 after the market consolidated to leave just one manufacturer producing the drug. Even if providers were able to obtain cysteine, the formulation was less than ideal because it contained high levels of aluminum. Since the product was introduced, science has advanced and produced a large body of evidence finding that high aluminum levels put newborns at greater risk for impaired neurologic development. Unfortunately, the only product available did not keep pace with the science, containing aluminum levels 30 times higher than the level recommended by the FDA for newborns.

Through ProvideGx, Premier learned that Exela Pharma Sciences, LLC, was in the process of seeking approval from the FDA to produce a new formulation of cysteine hydrochloride – one that reduced the aluminum levels well below the FDA’s recommendations. Not only did Premier help fast-track this approval through the FDA, but it also put this drug in the ProvideGx portfolio as soon as it could be commercially marketed.

As a result of the ProvideGx partnership, a new competitor was able to supply the market with a safer alternative to the incumbent. But the results don’t stop there.

**Because of this work, the two organizations contracted to produce enough supply to successfully resolve the nation’s shortage of cysteine hydrochloride. The product was officially delisted from the FDA’s drug shortage website on Sept. 4, 2019, just two months after it entered the market via the supply deal with ProvideGx.**
Ensuring Survival After Heart Surgery

In 2017, Richard Wilson was diagnosed with aortic valve stenosis, a condition in which the flaps of the heart valves thicken, stiffen or fuse together. With stenosis, heart valves cannot fully open, which makes the heart work harder to pump blood through the body and reduces the overall supply of oxygen. In 2019, doctors determined that Richard would need a valve replacement to treat his condition. However, during pre-surgical care, it was confirmed that he also had blockages, and would require open heart surgery.

After his surgery at Atrium Health’s Sanger Heart & Vascular Institute (Charlotte, N.C.), Richard started experiencing atrial fibrillation (or an irregular heartbeat), the most common complication for cardiac patients affecting about half of all surgical cases. Left untreated, AFib can lead to blood clots, stroke, heart failure and other potentially deadly complications. The best medicine to treat AFib in this case was metoprolol, a drug that Atrium Health had on hand as a result of its participation in the Premier ProvideGX program.

Had Richard been diagnosed a year earlier, that drug may not have been available for his doctors to administer. In 2018, the drug was in a nationwide shortage after Baxter Healthcare opted to withdraw from the market in order to focus its manufacturing on other drugs with higher demand. But after Premier approached the company with a guaranteed volume commitment and a long-term contract to supply metoprolol to thousands of member hospitals, the economics of that decision changed. Based on the strength of the ProvideGx economic model, Baxter decided to re-enter the market, making metoprolol available to health systems like Atrium Health, where it can be used to save lives – including Richard’s.

Based on the strength of the ProvideGx economic model, Baxter decided to re-enter the market, making metoprolol available to health systems like Atrium Health, where it can be used to save lives – including Richard’s.
Speeding Emergency Response Times

When dealing with a serious medical event, physicians and nurses need every possible supply at their fingertips, ready for immediate use. But imagine an emergency room responding to a 28-year-old mother suffering from a severe allergic reaction. The physician reaches down into the crash cart of supplies for an emergency syringe of epinephrine, the drug that’s needed to save her life, only to come up empty handed.

Sadly, that’s the reality in emergency rooms across the country.

Drug shortages can affect all types of generic medications, but they are particularly dire in the case of emergency, pre-filled syringes. Pre-filled syringes became the “go-to” standard for emergency care because they are pre-measured in the exact adult dose and ready to use, speeding response times and minimizing the potential for dosing errors. But, across the country, emergency syringes used to treat allergic reactions, manage trauma and reverse the effects of poisonings are nowhere to be had. Without them, first responders are forced to backpedal and jerry-rig alternatives, either administering the drug using vials or turning to a substitute product. Either response takes critical minutes that patients in a medical emergency don’t have.

To remediate this problem, ProvideGx partnered with Amphastar Pharmaceuticals to produce pre-filled, emergency syringes of calcium chloride, epinephrine, phytonadione, sodium bicarbonate, atropine sulfate, dextrose and lidocaine – seven front-line drugs clinicians routinely reach for in emergency department crash carts. With creative financing and group purchasing options, ProvideGx has created a real remedy to the emergency syringe shortage problem – something that emergency first responders – and their patients – can be grateful for.

To remediate this problem, ProvideGx partnered with Amphastar Pharmaceuticals to produce pre-filled, emergency syringes of calcium chloride, epinephrine, phytonadione, sodium bicarbonate, atropine sulfate, dextrose and lidocaine – seven front-line drugs clinicians routinely reach for in emergency department crash carts.
Ensuring Availability Before, During and After Pandemic Events

In the spring of 2009, H1N1 (also known as the swine flu) affected millions of patients in more than 214 countries. To provide care, providers need to surge buy supplies necessary to treat the virus, including personal protective products such as N95 respirators, vaccines and antiviral drugs.

Some of these products were produced in single location: Mexico. Mexico was particularly hard hit by the virus, forcing a government-mandated shut down of all businesses for nearly a week at the height of the crisis. That shutdown triggered widespread shortages, resulting in manufacture lead times of months to provide products that were needed immediately.

The experience with H1N1 taught supply chain leaders an important lesson about the dangers associated with overreliance on a single country or a single region for medical supplies. Yet despite that, about 13 percent of all facilities that make ingredients for U.S. drugs are located in China, and 85 percent of medicines in the U.S. strategic national stockpile use some component that comes from China. These statistics are particularly troubling given the recent outbreak of COVID-19 in China, with experts warning that closures of seaports or restrictions on exports could compromise supply and lead to widespread shortages for a range of products. However, the magnitude of that risk is almost impossible to assess, as no one, including the FDA, has complete data on what portion of what critical medicines originate in China.

To address this problem, Premier’s drug shortage programs require that manufacturer partners disclose both the finished dose centers of manufacture, as well as the sources for all active pharmaceutical ingredients. Manufacturers are then risk scored, and those with an undue concentration of manufacturing in a single region passed over in favor of those that source from multiple countries at a minimum, with preference given to those sourcing from multiple continents. Today, none of the drugs sourced through the ProvideGx program contain ingredients sourced from China, and all have diverse supply chains for sourcing ingredients and manufacturing finished goods.

As a result, these programs are helping to ensure enough diversity exists to continue to supply life-saving products before, during and after pandemic outbreaks, including COVID-19.
Giving Kids With Cancer a Fighting Chance

When 4-year-old Milo Sligh of Charleston, South Carolina, was diagnosed with childhood acute lymphoblastic leukemia (ALL) the diagnosis terrified his family.

ALL is one of the most common childhood cancers, affecting about 3,000 children a year, most between the ages of 2 to 5 years old. With ALL, the body's bone marrow makes too many immature white blood cells, leading to fevers, fatigue, bruising, bone pain, swollen lymph nodes and frequent infections.

While battling cancer can be a traumatic experience for children and their families, ALL is largely treatable. With the right chemotherapy, 98 percent of children with ALL go into remission within weeks after treatment begins, and about 90 percent of those children are cured. These results are all thanks to a chemotherapy drug called vincristine, the longstanding "gold standard" for treating many pediatric cancers, including ALL.

Vincristine has been around since the 1960s, and in many cases it is the only therapeutic option for care. But it's also relatively inexpensive, with an average sales price of about $5 per treatment. As such, very few drug companies have incentives to invest in vincristine, even though it's needed to treat about half of all pediatric cancer cases.

Vincristine went into nationwide shortages in October of 2019 after one of just two drug companies producing it exited the market for undisclosed reasons. Upon learning of the shortage, Premier went into action, contacting the remaining manufacturer, Pfizer Inc., to increase supply production through the ProvideGx program. Just six weeks later, the product was placed on a ProvideGx contract, and was made readily available to program participants.

Today, kids like Milo don't have to worry about missing a treatment or slowing down their recovery. Through ProvideGx, Premier is helping to ensure that every child fighting cancer has a full chance of survival.

"Every child with cancer whose treatment requires vincristine should receive the drug as scheduled...a situation that requires rationing of the drug is unacceptable.

Text from an open letter written by the Children's Oncology Group
Continuing Our Fight

While drug shortages continue to be a pervasive problem for patients and their providers, Premier and its member hospitals are taking a leadership role, stepping up to systematically address the root causes and provide the right economic models that incent manufacturers to increase supplies, invest in redundancies, enter or re-enter markets and explore new therapeutic categories for innovation. Although much work lies ahead, participants in Premier’s drug shortage programs can have confidence that they have access to a broader range of shortage products than anyone else in the market. Going forward, Premier will continue to fight this problem until every drug on the shortage list has been resolved nationwide.

For more information visit Premierinc.com/ProvideGx
About Premier Inc.
Premier Inc. (NASDAQ: PINC) is a leading healthcare improvement company, uniting an alliance of more than 4,000 U.S. hospitals and health systems and approximately 175,000 other providers and organizations to transform healthcare. With integrated data and analytics, collaboratives, supply chain solutions, and consulting and other services, Premier enables better care and outcomes at a lower cost. Premier plays a critical role in the rapidly evolving healthcare industry, collaborating with members to co-develop long-term innovations that reinvent and improve the way care is delivered to patients nationwide. Headquartered in Charlotte, N.C., Premier is passionate about transforming American healthcare. Please visit Premier’s news and investor sites on www.premierinc.com, as well as Twitter, Facebook, LinkedIn, YouTube, Instagram and Premier’s blog for more information about the company.

References
2. https://www.fda.gov/media/131130/download
3. ibid
4. ibid
5. https://www.nber.org/digest/nov17/w23640.shtml
10. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6499468/
14. ibid
15. https://www.fda.gov/media/131130/download
16. ibid
17. ibid
20. ibid
21. ibid
22. ibid
25. ibid
26. https://www.fda.gov/media/105829/download