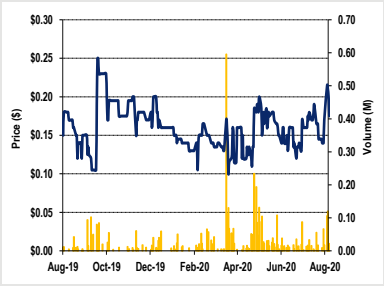


REVISIONS	Rev.	Prior
Rating	Spec. Buy	-
Target Price	$2.30	-
Revenue 2020E (C$M)	$0.0	-
Revenue 2021E (C$M)	$0.0	-
Revenue 2022E (C$M)	$69.0	-

MARKET DATA	
Date:	Aug 14, 2020
Current Price (C$):	$0.18
52-Week Range:	$0.10 / $0.27
Shares O/S (M):	81.2
Mkt Cap ($M);	$14.2
EV ($M):	$13.7
Avg. Weekly Vol. (M):	0.06

Website: www.xortx.com

FINANCIALS

Fiscal Year End: 31-Dec

	2020E	2021E	2022E
Revenue (C$M)	$0.0	$0.0	$69.0

	2019A	Q1/2020A
Cash ($M)	$0.1	$0.5
Current Assets ($M)	$0.8	$3.1
Net Cash ($M)	-$0.5	$1.9
Total Assets ($M)	$1.1	$3.4
Debt ($M)	$0.1	$0.1
Total Liabilities ($M)	$1.3	$1.2

Key Shareholders	(M)	% Held
Allen W. Davidoff	4.81	5.93%
Allan William Williams	2.00	2.47%
W. Bruce Rowlands	1.13	1.40%

Source: Company Reports, S&P Capital IQ, eResearch Corp.

Claude Camiré
Senior Equity Research Analyst

XORTX Therapeutics Inc. (CSE:XRX ; OTC:XRTXF)

Breaking Up The Code With Uric Acid

COMPANY DESCRIPTION:

XORTX Therapeutics Inc. ("XORTX" or "the Company") was founded in 2013 with a goal to develop drugs that could treat a number of diseases by reducing serum acid uric which has been linked to cardiovascular and renal diseases. Since its founding, **XORTX** is focused on kidney diseases with the development of new formulation for the orphan disease (polycystic kidney) with a larger scope to develop a treatment for diabetic patients with chronic kidney disease ("CKD"). **XORTX** does not have any approved drugs, but has two potential late stage drugs in development, each with a proprietary combination using Oxypurinol as the starting ingredient.

INVESTMENT HIGHLIGHTS:

- **Stock Price Upside Potential**
  - With a $14M market cap & multiple compelling value-creation opportunities in its pipeline, we expect this small cap biopharmaceutical company to become an attractive investment for investors and for commercial partners.
- **Two Programs Using Pre-Existing FDA Approved Drugs but Enhanced with its Proprietary Drug Delivery Technology**
  - The original drug approved >50 years ago for the treatment of gout has been restricted to other disease because of its toxicity and lack of benefits in ~30% of patients. With this new and improved drug formulation, the two drugs being developed by **XORTX** could now be therapeutically beneficial for disease indications with potential for orphan drug indication using the 505(b)(2) regulatory path.
- **Phase 3 Asset (XRx-008): Treatment for Polycystic Kidney Disease ("PKD")**
  - We believe the new formulation of xanthine oxidase inhibitors developed by **XORTX** could become a significant treatment option for patients with PKD. This program is ready to file with the FDA and initiate a pivotal Phase 3 clinical trial in the next 12 months.
- **Phase 3 Asset (XRx-101): Treatment for COVID-19**
  - **XORTX** has also developed another formulation for the treatment of acute kidney injury for hospitalized COVID-19 patients being treated in an intensive care unit. **XORTX** has started discussions with the FDA for initiating a pivotal Phase 3 clinical trial in the next 12 months.

FINANCIAL ANALYSIS & VALUATION:

- **Valuation: Our price target of US$2.30 is based on a DCF through 2030 with a discount rate of 20% consistent with smaller biotech companies.**
- **We estimate peak royalty revenues for XORTX in 2028 could exceed C$200M.**
- **Our target price is extremely conservative even when compared to a long list of biotech companies at a similar stage of development in kidney, liver or orphan diseases.**
- **Initiating coverage on XORTX with a Speculative Buy rating and a US$2.30 price target, representing a significant upside from current levels.**

All figures in CAD unless otherwise stated.

Contents

INVESTMENT OVERVIEW

Initiating coverage on XORTX Therapeutics Inc. (CSE: XRX) with a Speculative Buy rating and a US$2.30 price target, representing a huge upside from current levels.

- With just a $14 million market cap and multiple compelling value-creation opportunities in its pipeline, we expect this small cap biopharmaceutical company to become an attractive investment for investors and commercial partners. The two programs are based on an older FDA-approved drug for other indications and have been reformulated and enhanced with its proprietary drug delivery technology to increase bio-availability, reduce/eliminate side effects while increasing dosing range for patients. The original drug approved more than 50 years ago for the treatment of gout has been restricted to other disease because of its toxicity and lack of benefits in approximately 30% of patients. With this new and improved version, the two drugs developed by **XORTX** could now be therapeutically beneficial for diseases indications with large unmet medical needs.

FDA Phase 3 Asset (XRx-008)

- **XORTX** has accumulated a number of animal and epidemiological studies showing strong association between elevated serum uric acid and hypertension, insulin resistance, diabetes and especially kidney disease with loss of kidney functions. Two randomized controlled trials in patients with CKD and/or diabetic patients demonstrated xanthine oxidase inhibition can decrease uric acid concentration and significantly improved kidney function. Autosomal dominant polycystic kidney disease ("ADPKD") is a gradual disease with elevated uric acid and a progressive loss of kidney function which over time would lead to lifelong renal therapy when patients reached approximately 60 years old. We believe the new formulation of xanthine oxidase inhibitors developed by **XORTX** (XRx-008) could become a significant treatment option for these patients. This high value program is ready to file with the FDA and initiate a pivotal Phase 3 clinical trial in the next 12 months.

FDA Phase 3 Asset (XRx-101)

- **XORTX** has also developed another formulation for the treatment of acute kidney injury ("AKI") that may occur due to COVID-19 in patients hospitalized and treated in intensive care unit ("ICU"). In recent COVID-19 scientific papers, we found that 30-60% of ICU patients had elevated serum acid which could lead to renal failure or death in majority of cases. In previous studies, Oxypurinol has demonstrated the ability to inhibit break down purine and pyrimidine nucleotides to uric acid, decreasing the production of tissue uric acid and serum uric acid from reaching saturation and crystal formation in kidneys. We expect this final pivotal clinical trial to further demonstrate that XRx-101 could slow down or reverse tissue injuries in the setting of COVID-19 infection. **XORTX** has started discussions with the FDA for initiating a pivotal Phase 3 clinical trial in the next 12 months.

Significant Partnership with World Experts in Kidney Diseases

- On August 4, **XORTX** announced a partnership with Mount Sinai hospital in New York City to study the incidence of Acute Kidney Injury and Hyperuricemia in patients hospitalized with COVID-19. This partnership with world experts in AKI adds credibility for the Company and could provide valuable insight as to best determine a potential therapeutic treatment. Indirectly, **XORTX** is joining a network of individuals and organizations involved with artificial intelligence-enabled clinical diagnostic solutions for kidney disease. We believe this network of capabilities could lead to defining an optimal treatment. The alignment of Mount Sinai with **XORTX** could potentially outline a greater relationship with quick access to a pool of patients and quantify the role of xanthine oxidase inhibition as a potential treatment option in AKI in COVID-19 patients.

Valuation

Our price target of US$2.30 is based on a Discounted Cash Flow (DCF) valuation approach through 2030 with a discount rate of 20% consistent with smaller biotech companies. We estimate peak royalty revenues for **XORTX** in 2028 could exceed C$200 million. Our target price is extremely conservative even when compared to a long list of biotech companies at a similar stage of development in kidney, liver or orphan diseases.

Risks

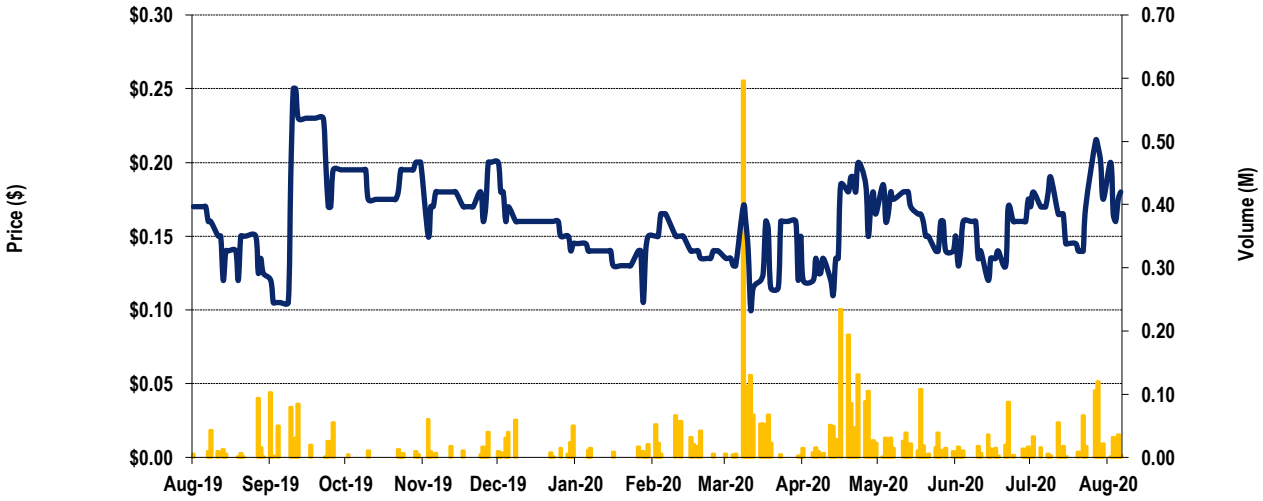
If XRx-008 fails to show robust effect in phase 3 for ADPKD, shares may have little downside support left. The Company's cash position of C$3 million as of Q1/2020 will require additional financing to complete clinical studies either from the capital markets, governments or commercial partnerships.

Figure 1: Valuation Scenarios

Potential Scenarios		
Upside Scenario	**Target Investment Thesis**	**Downside Scenario**
ASSUMPTIONS	**ASSUMPTIONS**	**ASSUMPTIONS**
XRx-008 FDA approval for ADPKD in 2024 in the US and 2025 in Europe	XRx-008 FDA approval for ADPKD in 2024 and EU approval in 2025	XRx-008 does not receive FDA or EU approval for ADPKD
XRx-101 FDA approval for acute kidney injury for COVID-19 patients in 2023 and the FDA expand approval to normal AKI found in intensive care	XRx-101 FDA approval in 2023 for Acute Kidney Injury for COVID-19 patients	XRx-101 has a 30% probability of success in obtaining FDA approval given there are many other drugs to treat other symptoms
TARGET PRICE: US$3.60	**TARGET PRICE: US$2.30**	**TARGET PRICE: US$0.35**

Source: eResearch Corp.

Figure 2: XORTX Price Range Jan 2018- July 2020



Source: Yahoo Finance

COMPANY INFORMATION

XORTX Therapeutics Inc. - Overview

XORTX was co-founded in 2013 by Dr. Allen Davidoff and Dr. Alan Moore with a goal to develop drugs that could treat a number of diseases by reducing serum acid uric thereby blocking its mechanism of injury leading to cardiovascular and renal diseases.

Since its founding, **XORTX** has focused on kidney diseases with the development of new formulation for the orphan disease (polycystic kidney) with a larger scope to develop a treatment for diabetic patients with chronic kidney disease (CKD).

XORTX has a drug delivery "toolbox" called XORLO, an innovative technology which can tweak Oxypurinol formulation by improving its features to substantially increase the aqueous solubility and the bioavailability of drug to an optimal dosage according to the disease. This new formulation increases the dosing range for patients and is intended to substantially reduce the side effects of the original drug which was developed more than 50 years ago.

These improved drugs, also referred as repurposed or second generation drugs, can be adapted for different disease indications where elevated uric acid is a common denominator: pre-diabetes, insulin resistance, metabolic syndrome, diabetes, diabetic nephropathy, infections and fatty liver disease.

XORTX does not have any approved drugs yet, but has two late stage drugs in development, each a proprietary combination using Oxypurinol as the starting ingredient.

There are two clinical programs currently ongoing:

- XRx-008 for ADPKD an orphan indication in the U.S., Europe and Japan. **XORTX** is currently in discussions with the USFDA to review the critical development pathways for a pivotal Phase 3 clinical trial that would lead to a commercial launch potentially in 2024.
- XRx-101 for the treatment of AKI due to coronavirus COVID-19 infections. According to recent reports between 30-60% of hospitalized COVID-19 patients are diagnosed with an elevated uric acid (usually more than 7.0 mg/dL) which is the first sign of kidney dysfunction leading to AKI. This concentration of uric acid in the circulation is well characterized as sufficient to induce AKI. **XORTX** is also in discussions with the FDA for the design of a pivotal Phase clinical trial that would lead to a commercial launch potentially in 2023.

XORTX became public in Q1/2018 by completing a reverse take-over with APAC Resources Limited.

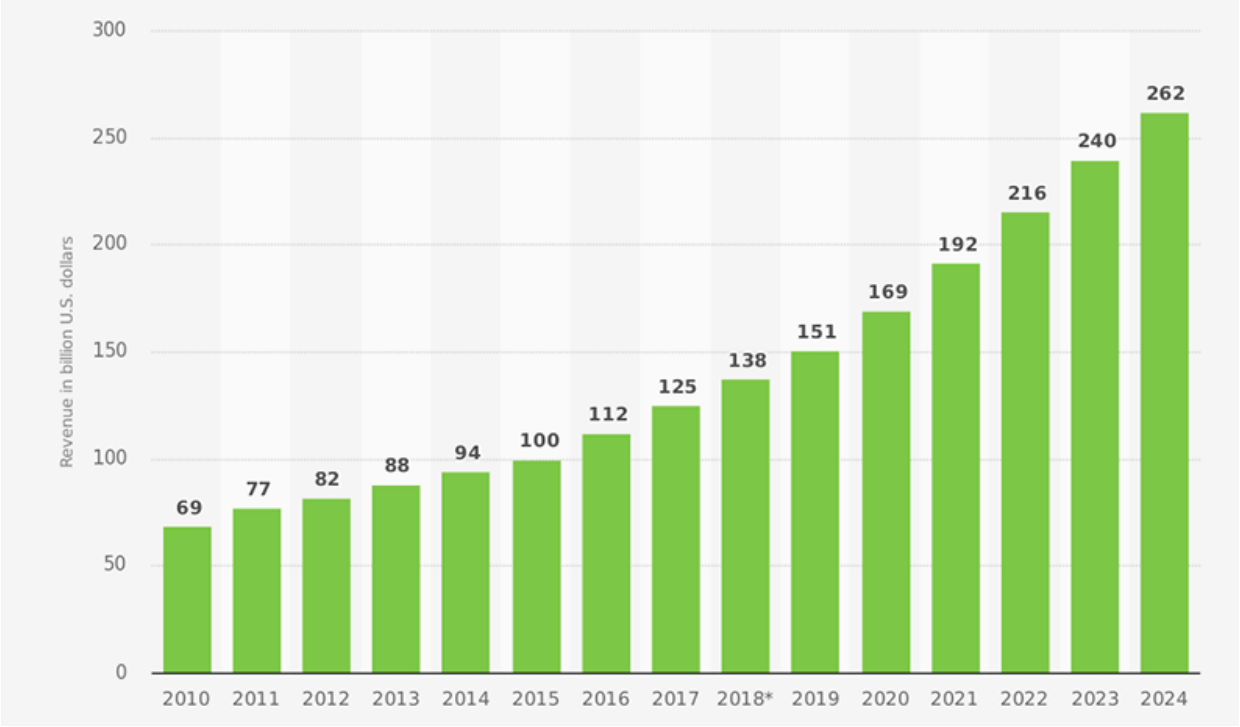
FINANCIAL INFORMATION	
Market Cap – August 14, 2020	**C$14M/ US$ 11M**
Common Shares Outstanding	**81.2 M**
Fully Diluted Shares Outstanding	**101.7M**
Price reflected on the CSE–	**C$0.18**

ORPHAN DRUG MARKET

Orphan Diseases have a Very Lucrative Market Potential

XORTX's lead product (XRx-008) is focused on the treatment of an orphan kidney disease. With more than 7,000 orphan drugs, many successful drug companies have focused on this market opportunity. While drugs are being introduced at higher price points, orphan drugs are launched at an initial base price that are many times that of other drugs for larger population diseases. According to **Evaluate Research**, the global market for orphan diseases is expected to reach US$262 billion in 2024 and grow an estimated 11.5%/year from 2020-2024, more than 3x the growth for large disease indications.

Figure 3: Global Orphan Drug Revenues from 2010-2024 (US$B)



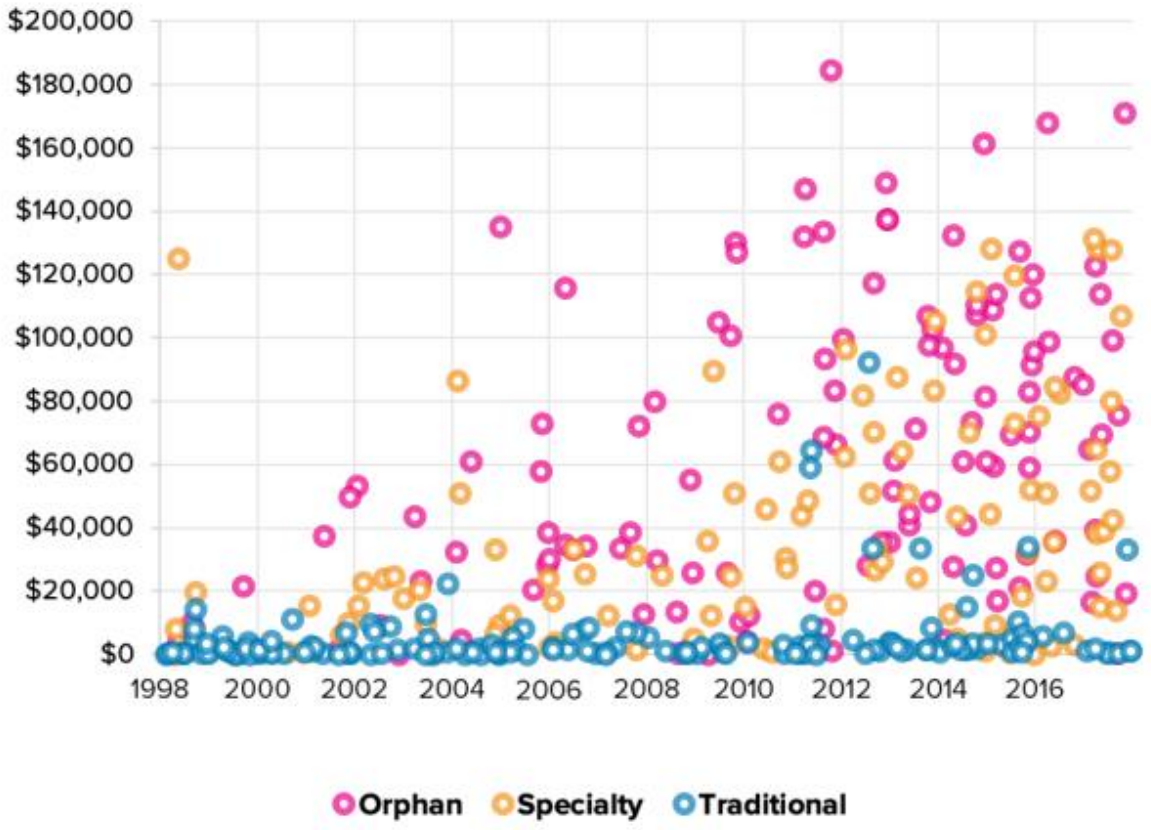
Source: Evaluate

Orphan disease is a fast growing market with rewarding expectations:

- In a recent study by **American Health Insurance Plans** (2019), from 1998 to 2017, the average annual pricing for orphan drugs increased 26-fold, while the cost for all other drugs doubled. For example, the average annual orphan drug cost rose from US$7,136 in 1997 to US$186,758 in 2017.
- Rare diseases impact more than 30 million Americans.
- More than 88% of orphan drugs cost more than $10,000 per year per patient (see Figure 4)

- Among the top 10 best-selling drugs, seven are with orphan indications.
- The average gross margin of orphan drugs is estimated to be greater than 80%.
- More than 770 drugs have been approved by the FDA for the U.S. market for orphan diseases.
- Cost of developing orphan drugs is lower compared to traditional drugs as clinical trials require fewer patients placing orphan drugs at an advantage in the regulatory review process.

Figure 4: Average Pricing of New Orphan Drugs at Launch- 1998-2017



Source: America Health Insurance Plans (2019)
Note: 22 orphan drugs had an annual treatment price >$200,000 is not shown on this graph

KIDNEY DISEASES

Understanding the Different Stages of Kidney Diseases

Estimated glomerular filtration rate or eGFR measures the level of kidney function and determine the stage of kidney health/disease.

Like most diseases which develop over time, it is recommended to have a regular test to analyze the trend. A GFR value below 60 for three months or more or a greater than 60 with kidney damage (marked by high levels of albumin in your urine) indicates chronic kidney disease (CKD). Physicians may provide additional testing such as CT scan, ultrasound or a biopsy if the situation deteriorates to determine the course of treatment.

In most cases, CKD can be viewed as a progressive disease over several decades from either a genetic component or co-morbidities linked mostly to nutrition rather than a sudden event that eventually lead to renal therapy for the rest of life. According to the **U.S. National Institute of Diabetes and Digestive and Kidney Diseases** website more than 15% of U.S. adults have CKD. With advancing decline of kidney function, the process often accelerates leading to rapid decline in the last five years, resulting in end stage renal disease and the need for dialysis or transplantation.

CKD has a huge financial burden, especially in the U.S. given the high cost of healthcare compared to the rest of the world. In 2017, Medicare reported healthcare costs of US$84 billion for CKD patients in stages 1 to 4 and another US$36 billion for patients in stage 5 (renal therapy). Using cost per patient, stage 5 reached US$92,000 which is 4x more than all other CKD patients. According to government reports, healthcare costs of US$120 billion only represent the portion paid by Medicare/Medicaid and does not include patients on private insurance.

Figure 5: Stages of Chronic Kidney Disease (CKD)

STAGES OF CHRONIC KIDNEY DISEASE		GFR*	% OF KIDNEY FUNCTION
Stage 1	Kidney damage with **normal** kidney function	90 or higher	90-100%
Stage 2	Kidney damage with **mild loss** of kidney function	89 to 60	89-60%
Stage 3a	**Mild to moderate** loss of kidney function	59 to 45	59-45%
Stage 3b	**Moderate to severe** loss of kidney function	44 to 30	44-30%
Stage 4	**Severe** loss of kidney function	29 to 15	29-15%
Stage 5	Kidney **failure**	Less than 15	Less than 15%

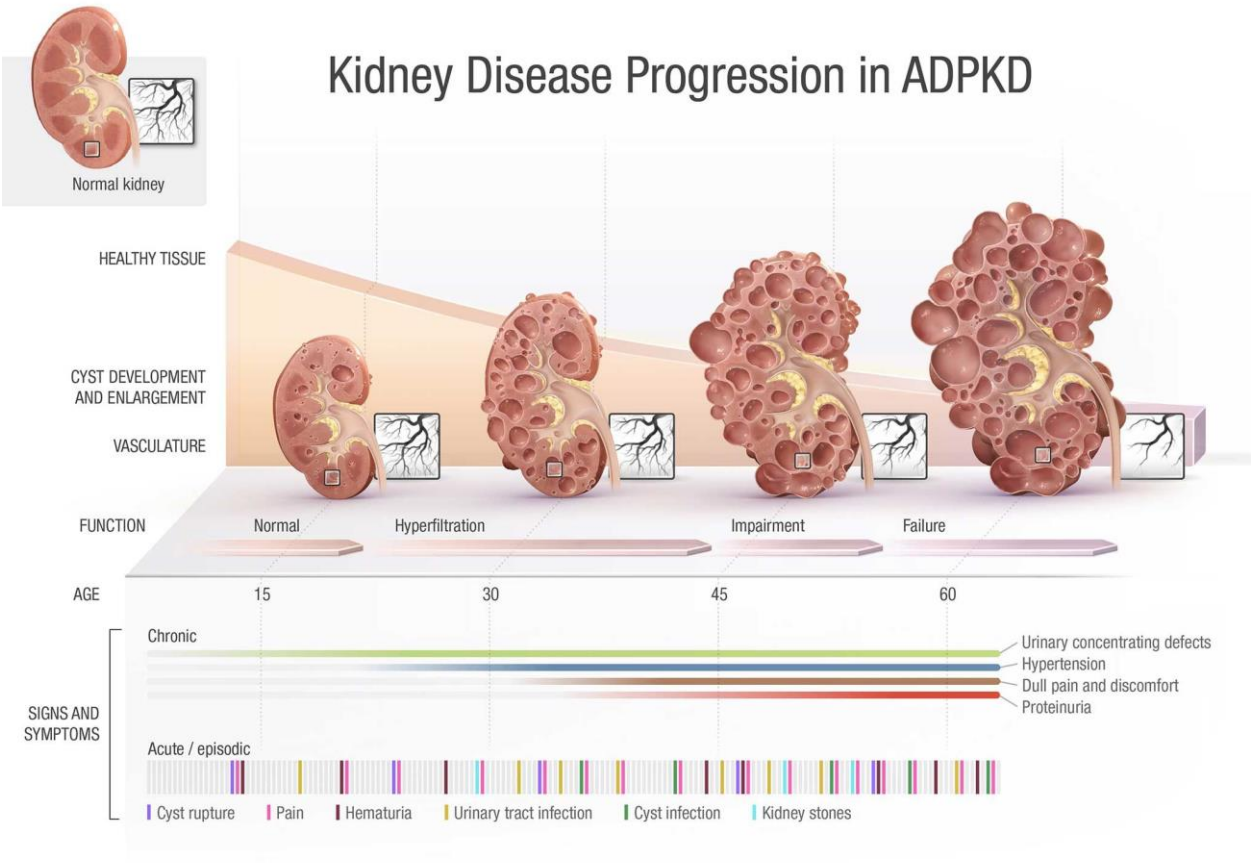
Source: www.kidney.org

What is Autosomal Dominant Polycystic Kidney Disease (ADPKD)

ADPKD is a genetic condition that causes the creation of cysts with fluids to develop in kidneys and potentially other organs. ADPKD is a progressive disease over decades that lead to kidney failure or End Stage Renal Disease ("ESRD"). The development and growth of these cysts over time is believed to progress towards loss of renal function or kidney failure, as well as other severe complications. More than 50% of patients by the age of 50 years old and more than 75% of patients by the age of 70 years old will have a kidney failure resulting in life long renal therapy. ADPKD represents 85% of PKD cases and is amongst the most rapidly progressing form.

ADPKD is the most significant genetic cause of kidney failure and affects approximately 140,000 diagnosed patients in the U.S. alone. We believe a greater number of patients are undiagnosed until they reach a later or fatal stage. ADPKD is caused by mutations from the PKD1 or PKD2 genes, which encode for proteins called polycystin-1 and polycystin-2, respectively. Continued efforts are underway to better understand the different roles of inflammation, mitochondrial dysfunction and uric acid in the pathophysiology ADPKD. Multiple therapeutic strategies used to slow progression to renal therapy have failed.

Figure 6: Kidney Disease Progression in ADPKD



Source: PKDcure.org

Diagnostic is Key for Patients with ADPKD

Generally, the function of kidneys is to filter out excess toxic, waste substances and fluid from the blood. In people with polycystic kidney disease (PKD), the kidneys become enlarged with cysts and increase in volume that impair normal kidney function. Over time this leads to kidney failure, a need for dialysis or kidney transplantation. There are two major forms of PKD: autosomal dominant polycystic kidney disease (ADPKD) and autosomal recessive polycystic kidney disease (ARPKD). ARPKD is rare and usually occurs in childhood and adolescence.

ADPKD is a more frequent genetic disease. The child of an affected parent has a 50% chance of inheriting the disease. The estimated incidence is approximately 1 in 20,000 people. Many parents go undiagnosed during their lifetime because of milder symptoms or other co morbidities. ADPKD affects people of all races and genders. The disease is primarily caused by mutations in the PKD1 (85%) and PKD2 (15%) genes of patients. Both types of ADPKD can lead to renal failure, but patients with mutations in PKD1 generally progress to kidney failure earlier in life. Multiple factors must be analyzed to determine the extent of the disease: kidney volume, first signs of high blood pressure and family history. The quasi-exponential growth of the kidney is usually the first hallmark before the decline in glomerular filtration rate (GFR).

Apart from renal cysts, ADPKD patients usually have other co-morbidities in other organs such as the liver, pancreas and other tissues leading to hypertension, in 50-70% of patients and left ventricular hypertrophy in 20-40% of patients.

Prevalence of ADPKD – Undiagnosed Patients Remain Significant

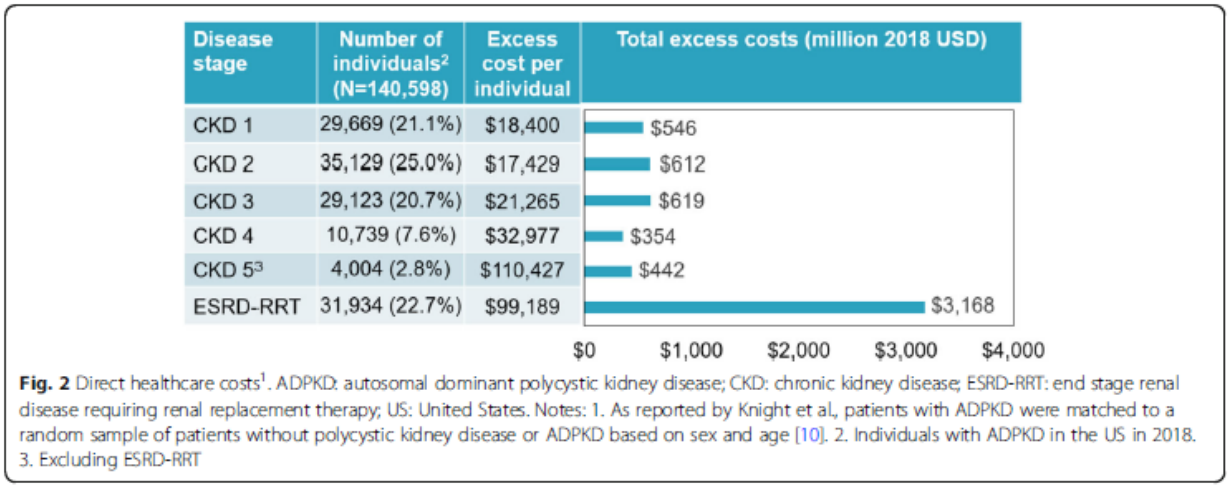
According to a recent study published by Willey (ref 29, 30), there is an estimated 140K diagnosed prevalence in the U.S. with an annual incidence of ~2,500 new patients. Currently in the U.S. and Europe, an average of 5 to 8% are currently on renal therapy which are typically older patients (>50 years old) and demonstrate exactly that ADPKD is a progressive disease. In 2014, close to 32,000 patients on long term renal therapy cases were attributable to ADPKD making it the fourth leading cause of new cases behind diabetes, hypertension, and glomerulonephritis in the U.S.

In Europe, the rate of prevalence is fairly similar based on Willet et al, who analyzed multiple studies over the last two decades. It was concluded that in Europe (EU27), with an estimated population of 445 million people in 2020, ADPKD had a prevalence of ~176,000 and an incidence of new patients of approximately 2,800/year which seems to be more rigorous. In conclusion, ADPKD is probably underdiagnosed as mentioned in numerous epidemiology studies that we have researched.

According to a recent study published in 2020 (ref 11) for the U.S., the estimated costs recognized to ADPKD patients in 2018 ranged from US$7.3-$9.6 billion or $52,000-$68,000 per patient. These costs include direct healthcare costs accounted for approximately 78% mostly driven by patients requiring renal replacement therapy accounting for 43%. Indirect costs or 22% is accounted from productivity loss from unemployment or missed work days. The study used 2018 data as a starting point and did not include any prescription drug costs given the only drug approved was later in 2018.

Unfortunately, Europe published only regional studies but we have assumed the financial burden is probably 50-75% of the U.S. burden. This conclusion is based on our own estimates given that private healthcare is less popular in EU and private healthcare is usually much more expensive in any parts of the world. The following table (Figure 7) further demonstrates the cost of this progressive disease for each stage of chronic kidney disease.

Figure 7: Financial Burden Associated With ADPKD in the U.S. (2018)



Disease stage	Number of individuals[2] (N=140,598)	Excess cost per individual	Total excess costs (million 2018 USD)
CKD 1	29,669 (21.1%)	$18,400	$546
CKD 2	35,129 (25.0%)	$17,429	$612
CKD 3	29,123 (20.7%)	$21,265	$619
CKD 4	10,739 (7.6%)	$32,977	$354
CKD 5[3]	4,004 (2.8%)	$110,427	$442
ESRD-RRT	31,934 (22.7%)	$99,189	$3,168

Fig. 2 Direct healthcare costs[1]. ADPKD: autosomal dominant polycystic kidney disease; CKD: chronic kidney disease; ESRD-RRT: end stage renal disease requiring renal replacement therapy; US: United States. Notes: 1. As reported by Knight et al., patients with ADPKD were matched to a random sample of patients without polycystic kidney disease or ADPKD based on sex and age [10]. 2. Individuals with ADPKD in the US in 2018. 3. Excluding ESRD-RRT

Source: Cloutier et al., BMC Health Services Research (2020)

TREATMENT OPTIONS

Treatment Options for ADPKD– Very Few Drugs in Clinical Development

Current treatment approaches for ADPKD include blood pressure-lowering therapies or Jynarque (Otsuka Pharmaceuticals), a selective vasopressin V2-receptor antagonist, the only approved treatment by the FDA in 2018. With limited therapeutic options, ADPKD patients continue to lose kidney function and progress towards renal therapy, highlighting the need for safer and more efficacious therapies. Non-therapeutic options include surgical procedures which carry the higher risk of morbidity and not all patients are qualified for this approach. Lowering blood pressure and reducing salt intake have not proven useful for patients in altering the course of the disease.

A review of the current approved drug therapy and other potential clinical stage contenders shows there is still an unmet need for many patients:

Otsuka Pharmaceuticals (TSE: 4768; Market Cap: US$9.5 billion)

Jynarque received FDA approval for the U.S. market (April 2018) for adults only to slow kidney function decline. The drug was also approved in Canada and Europe in 2015. Jynarque is a vasopressin 2 receptor antagonist (diuretic) and continuously promotes cellular proliferation and fluid accumulation into stopping the growth of cysts. Originally submitted for patients in Stage 1-3, the license has since been extended to stage 4 patients (stage 5 being terminal stage). Patients are paying in excess of $200K/year (2020 pricing) for a long-term treatment. Revenues are expected to reach approximately US$1.5 billion in 2020E. The drug could have been even more successful if the safety profile had been more acceptable. The most significant side effects from its Phase 3 clinical trials were:

- Thirst – 4-55%
- Polyuria – 5-38%
- Nocturia – 5-29%
- Polydipsia – 2-10%

In the Phase 3-TEMPO trial which enrolled 1,445 patients for stage 2-4 ADPKD patients generated mixed results. The GFR decline was slower with Jynarque than placebo but not significant for all patients to reverse the disease over time. The one year results showed the Jynarque group to decline -2.34 mL/min/1.73m vs -3.61 mL/min/1.73m which was statistically significant. In addition, serious hepatic related adverse events and

elevations of liver enzymes greater than 3x the placebo group have been reported in the Jynarque patients. The drug is certainly an improvement over the standard of care but remains sub-optimal given the side effects (23% of patients dropped the clinical study from side effects) and the expensive treatment cost. Additionally, the clinical trials included mostly for stage 1-3 CKD patients and not for stage 4. When looking at subgroup analysis, evidence failed to show overall benefits in severe patients given this is not a cure but rather a temporary fix. The potential liver toxicity and the very high cost of this drug (>US$200,000/year) provide a tremendous opportunity for a more effective, safer and cost effective for this growing population.

Reata Pharmaceuticals Inc. (NASDAQ: RETA; Market Cap: US$5.4 billion)

In 2019, **Reata** announced positive data from its Phase 2 trial of Bardoxolone that included 31 patients and was based on data for only 12 weeks. The drug Bardoxolone increased the GFR by 9.3 mL/min/1.73 m2 (n=31; p<0.0001). Based on these results **Reata** launched in Q3 2019, the FALCON Phase 3 study with approximately 300 patients with ADPKD. Bardoxolone is an oral once-daily activator of Nrf2, a transcription factor that reduces inflammation by restoring mitochondrial function, reducing oxidative stress, which plays an important role in maintaining kidney function and structure. The FDA has granted orphan designation to Bardoxolone for the treatment of Alport syndrome and for ADPKD. Reata is also betting to treat other kidney related diseases such as Alport Syndrome and IgA Nephropathy.

The only caveat is found in previous studies dating back to 2012 with the BEACON trials when the studies were stopped because of safety issues. This was the main reason why its commercial partner (Abbvie) decided to end the partnership. Unless the drug was modified (we don't know), we remain skeptical about the long term safety in this new patient population. **Reata** is doing a two year safety study to ensure no serious side effects. Although the use of Nrf2 activators (**Reata** and **Otsuka** drugs) in clinical trials improved the GFR in patients with diabetic nephropathy, increased albuminuria was observed. Additionally, Nrf2 activation has been found in kidney cancers and is considered involved in cancer progression. Nrf2 activation does not always lead to positive effects on kidney diseases. Long term trials should provide more insights.

Regulus Therapeutics Inc. (NASDAQ: RGLS; Market Cap: US$23 million)

In April 2020, **Regulus** initiated the final leg of it Phase 1 clinical trial for RGLS4326, a novel oligonucleotide designed to inhibit miR-17. Preclinical studies with RGLS4326 have demonstrated direct regulation of PKD1 and PKD2 in human ADPKD cyst cells, a reduction in kidney cyst growth, and improved kidney volume with an impact on GFR. **Regulus** completed this study in July 2020. **Regulus** is planning to initiate a Phase 1b short-term dosing study in patients with ADPKD in the second half of 2020 to evaluate RGLS4326 for safety, pharmacokinetics, and biomarkers of pharmacodynamics activity. This is a novel approach for which we have little history to understand its potential impact on this disease.

XORTX'S THERAPEUTIC APPROACH

Lowering Uric Acid Could Improve Kidney Functions of ADPKD patients

Currently serum creatinine is used to calculate the glomerular filtration rate (GFR) as the main biomarker of renal function. However there are some issues with the approach such as:

- Serum creatinine level is swayed by multiple non-kidney factors (age, gender, muscle mass, muscle metabolism, diet, medications, amputations and hydration status).
- Serum creatinine production is usually decreased in sepsis disease state.
- The tests could be required several times to confirm a renal stage condition and physicians must determine the impact of other factors.

Kidneys are constantly challenged by calcium oxalate, calcium phosphate, uric acid and other saturated solutions present in the urinary filtrate that may precipitate while passing through the tubular system. While millions of crystals may form within kidneys on a daily basis, most are excreted safely with urine. Several observations support a link between the progression of kidney disease and cumulative renal crystal burden: >24% of ADPKD patients have high incidence of gout and >60% have hyperuricemia (very high uric acid- upper end of the normal range is 360 µmol/L (6 mg/dL) for women and 400 µmol/L (6.8 mg/dL) for men). There is a strong correlation between crystal deposition and accelerating ADPKD progression. If this conclusion is correct, then therapeutics that reduce renal crystal formation could also slow progression in ADPKD patients and stabilize kidney health. Any therapy that can delay progression of kidney disease for PKD patients holds the potential to redefine how this disease is treated in the future and importantly preserve quality of life for patients.

Current guidelines in the North America for CKD management do not recommend testing for the level of uric acid in the absence of a gout or urate nephrolithiasis. For decades, elevated levels of uric acid have been the hallmark for gout disease patients. For years we have also known that 50% of gout patients also had kidney disease issues. We have identified a large body of evidence and research supporting a direct causal relationship between levels of uric acid levels and the development of kidney diseases.

In the scientific literature, hyperuricemia is found to be closely related to the development of Type 1 Diabetes Mellitus ("T1DM") and Type 2 Diabetes Mellitus ("T2DM") and its chronic complications such as cardiovascular and kidney diseases. Multiple animal and human experiments have confirmed that uric acid affects diabetes and its complications through inflammation, oxidative stress, endothelial function damage, and other effects. As such, there are multiple articles demonstrating a strong correlation between an elevated uric acid and the decline in GFR.

- In October 2019, the Journal of Nephrology, the Italian Diabetes Society issued a Joint Statement on Diabetes and kidney diseases (ref 20): "An independent association between serum uric acid levels in the high-normal range and eGFR decline was detected in patients with both Type 1 Diabetes ("T1DM") and Type 2 Diabetes ("T2DM") and also in non-diabetic individuals. The association in patients with T2D was confirmed by a recent meta-analysis and appeared to be restricted to individuals with preserved renal function at baseline. How serum uric acid can incite eGFR loss is not completely understood, but pro-inflammatory mechanisms have been suggested. Based on these findings, serum uric acid has been proposed as a target for treatment of CKD."
- In 2014, Han et al. (ref 16) published an observational study in the BMC Nephrology Journal about Hyperuricemia and deterioration of renal function in ADPKD. The results showed statistically significant improvement of GFR by reducing uric acid: "Hyperuricemia was associated with reduced initial eGFR, independent of age, sex, hypertension, albuminuria, and total kidney volume. During a median follow-up period of over 6 years, patients with hyperuricemia showed a faster annual decline in eGFR (−6.3% per year vs. −0.9% per year, p = 0.008). However, after adjusting for age, sex, hypertension and initial eGFR, serum acid uric was no longer associated with either annual eGFR decline or the development of ESRD. Among 53 patients who received hypouricemic treatment, the annual eGFR decline appeared to be

attenuated after hypouricemic treatment (pre-treatment vs. post-treatment: −5.3 ± 8. 2 vs. 0.2 ± 6.2 mL/min/1.73 m2 per year, p = 0.001".

- In a recent study published by Pilemann-Lyberg (ref 19) titled as "Uric Acid Is an Independent Factor for decline in Kidney Function, Cardiovascular Events and Mortality in Patients with Type 1 Diabetes", the results of the study showed that "In individuals with T1D, a higher uric acid level is associated with a higher risk of decline in kidney function, CVE, and mortality, independently of other risk factors. Our results suggest that UA has a promising role in risk stratification among individuals with T1D".
- In the article from Xiong (ref 30) in 2019, titled "Effects of Uric Acid on Diabetes Mellitus and its Chronic complications" their conclusions stated that "Complex genetic and environmental factors contribute to causing diabetes and chronic complications of diabetes may occur throughout the body pathogenesis of T2DM is complex, involving various interacting factors. Its increased incidence rate is a great concern worldwide. Hyperuricemia is closely related to the development of diabetes and its chronic complications. Many animal and human experiments have confirmed that UA mainly affects diabetes and its complications through inflammation, oxidative stress, endothelial function damage, and other effects".

The large body of scientific evidence could be lead to use serum uric acid as a valid biomarker for improving the lives of patients and the use of uric acid lowering agents to potentially reverse/improve kidney functions. Please refer to the Appendix for references on more scientific studies on the subject.

Why Oxypurinol Could Help

Both drugs being developed by **XORTX** are in the xanthine oxidase inhibitor class of drugs and are based on the concept of reducing uric acid in blood and urine. Both drugs share the same technology formulation (XORLO) developed by **XORTX**. Both drugs were developed by improving Allopurinol, approved in 1966 for the treatment of gout. Second generation drugs are based on Oxypurinol which is a xanthine oxidase enzyme inhibitor and is metabolized from Allopurinol, however it should be noted to have better safety profile, and so is better suited for chronic oral use.

Oxypurinol binds and block the enzyme that converts hypoxanthine to xanthine. Since xanthine is the precursor of uric acid, this inhibition of uric acid production reduces the blood levels of serum uric acid. The scientific literature relates that elevated uric acid leads to PKD and other complications in other organs. Oxypurinol enables the integration of hypoxanthine and xanthine into the DNA and RNA, resulting in further declines of serum uric acid concentrations. The drug formulation referred as XORLO has unique properties of increasing bioavailability of Oxypurinol and could provide a greater range of dosing for patients.

There are other xanthine oxidase inhibitor drugs approved and used as urate-lowering agents for the treatment of gout: uricosurics and uricase.

Uricosurics drugs inhibit the reabsorption of uric acid from the urine resulting in lowering uric acid but increase the chances of developing kidney stones, a situation which already exists for patients with ADPKD and diabetic nephropathy. All uricosurics carry an increased risk of precipitation of urate stones a reason why under-elevated urinary urate is a contraindication for these agents.

Other Xanthine Oxidase Inhibitors (XOI) such as Allopurinol and Febuxostat are exclusively prescribed for gout patients; however approximately 30% patients have side effects with toxicity of the drugs. Cost remains the major limitation in Febuxostat use as well as FDA black box warnings related to liver and cardiac safety; the cost-analysis studies describe it as a second option after Allopurinol which has shown to be ineffective, not tolerated or contraindicated. Additionally side effects and toxicity effects restrict their use during long period of time. Even for gout, potential benefits for these drugs have been mixed, in terms of absolute risk reduction with severe adverse hypersensitivity reactions.

Figure 8: Current Agents for ADPKD are Ineffective at Best

CLASS	IP	ADVANTAGES	LIMITATIONS
Uricosurics	Varied	Decrease uric acid absorption/ reuptake	Inappropriate: Increase kidney stone formation
Uricase	Off Patent	Acute IV use	Cannot be used chronically
Xanthine Oxidase Inhibitors			
Allopurinol	Off Patent	Decreases UA production and serum uric acid ~2-3 mg/dL. Well Characterized Acceptable side effect profile	Only approved for GOUT Only works well in ~28% of individuals Modest effect (~2-3 mg/dL) Side effects: Rash, Liver Enzymes, Kidney
Febuxostat	2019	Higher Potency - decreases UA production and serum uric acid ~2-6 mg/dL	Only approved for GOUT and Cancer * Recent FDA Boxed Warning
Oxypurinol (free acid)	2034	Decreases UA production ~2-3 mg/dL Improved tolerability	Modest effect Poor Bioavailability
XRx-008	2034	Decreases UA production ~2-3 mg/dL Improved tolerability 3X increase in Bioavailability	Comparable efficacy to Allopurinol
XRx-101	2040	Inhibits Xanthine Oxidase, decreases uric acid production Clean safety profile and improved tolerability	None observed to date

Source: Company Report

XORTX May Have a Better Formulation

The new and improved formulation of Oxypurinol supported by science and clinical studies is expected to increase the bioavailability of the drug. The improved safety profile could expand its applications to other diseases. A number of studies have demonstrated the role of XOI for different diseases with elevated serum uric acid. Very high serum acid is present in hypertension, diabetes and kidney diseases, and diabetic nephropathy.

In a clinical trial with approximately 700 patients treated to date the rate of rash and liver enzyme elevation is substantially reduced suggesting that Oxypurinol is superior in terms of tolerability to Allopurinol. The drug delivery technology XORLO, developed by **XORTX,** includes the addition of L-Arginine as bioavailability enhancer and demonstrated nephro-protective effect. Therefore this improved patented formulation (2034 patent) of Oxypurinol is expected to provide an additional benefit compared to Allopurinol alone. **Therapeutic intervention to reduce uric acid could provide a treatment modality that ultimately reduces inflammation and modifies the underlying disease pathology.**

Clinical safety: Oxypurinol is the active metabolite of Allopurinol. There have been no adverse events reported that are unique to Oxypurinol.

ACUTE KIDNEY INJURY FOR COVID-19 PATIENTS

Healthcare Industry Focusing Huge Efforts for Novels Solutions

It is difficult to imagine an individual or an organization that has not been affected by the COVID-19 pandemic. As we begin this new journey, there are tremendous efforts in the world from all industries to manage these issues and find solutions. As of end of July 2020, there are >300 drugs/treatments and >150 vaccines in development from small to large companies. While we cannot predict the length or the future voracity of this virus, companies, governments, private equity and investors have thrown huge amounts of money to monetize this situation which is likely to continue for some time.

As we learn more about the virus, scientists are looking into the reasons why some people get infected with mild symptoms while others end up in hospital in acute care under intensive treatments. There are multiple questions as to which class of drugs is optimal for patients suffering from mild, severe or acute symptoms. While some drugs may prevent the virus from spreading, other drugs will be needed to be used in combination of treatment to help the more severe cases. Currently no treatments have been found to be optimal for different categories of patients.

Since the initial outbreak, older people (>60 years old) with at least one co-morbidity (diabetes, metabolic syndrome, obesity, cardiac issues or elevated blood pressure) have the highest risk of mortality. Initial reports were mainly focused on T2DM, although recent reports have shown that individuals with T1DM are also at risk of complications with COVID-19. Current drugs such as glucose lowering agents (statins) and anti-viral treatments are being tested to reduce the current comorbidities but have failed to provide the expected benefits. Finally, severe acute patients with respiratory syndrome might represent a worsening factor for people with diabetes, cardiac issues and hypertension as it can precipitate metabolic complications on other organs leading to sepsis and AKI.

Recent COVID-19 studies report between 23-65% of COVID-19 hospitalized patients developed AKI (AKI). The variance in diagnosed patients is reflected in the different methodologies and expertise of health centers. In a recent observational study (ref: 8) of 3,235 hospitalized patients in New York City, AKI occurred in 46% of patients and 20% of those patients required dialysis. AKI was associated with increased mortality, with 44% of patients discharged alive had residual acute kidney disease. Patients who contracted AKI were older with other comorbidities such as high blood pressure, heart issues, diabetes, and chronic kidney disease. The most important lab tests revealed those patients to have higher white blood cell count, lower lymphocyte %, higher creatinine values, and higher blood pressure. Many studies concluded that patients who survived AKI did not have those co-morbidities in general, while the sicker patients had a higher mortality or in a great majority of cases would require life-long dialysis treatment.

AKI is defined as “functional or structural abnormalities or markers of kidney damage including abnormalities in blood, urine, or tissue tests or imaging studies present for less than three months.” AKI is a direct result from decreased renal perfusion, a toxic insult to the renal tubule, inflammation and edema or decline in the filtering capacity of the glomerulus. AKI is usually associated with retention of creatinine, urea and other metabolic waste products that are normally evacuated by the kidney. AKI has usually three main causes: sudden drop in blood flow in kidneys, damage/toxicity from medicines, poisons or infections (sepsis) and finally a sudden blockage that stops urine flowing through the kidneys. You are likely to get an AKI if you are older and have other comorbidities such as kidney or liver disease, diabetes, high blood pressure, heart failure or obesity.

There could be a number of reasons why the kidney becomes impaired with COVID-19 virus. Among the current theories are:

(1) It is assumed that viral load induce cytotoxicity of renal cells;
(2) Fever, vomiting and diarrhea could cause the kidney to be overwhelmed;
(3) The nephrotoxicity of current drugs taken by patient with the addition of new drugs could cause interaction especially with non-steroidal anti-inflammatory, antivirals and antibiotics drugs; and
(4) Circulating endothelial and bacterial cell debris as well as increased circulating uric acid concentrations induces AKI and a pro-coagulative state.

In the setting of acute tissue injury, Oxypurinol could inhibit break down of purine and pyrimidine nucleotides to uric acid and decrease the production of uric acid and serum uric acid from reaching saturation and crystal formation.

XRx-101 Could Be A Potential Treatment For COVID-19 Patients Who Are Hospitalized and Protect Against AKI.

Two key studies (one in a mouse model of influenza and another in herpes infection) have shown XRx-101 can act as an anti-viral, lowering uric acid and also could protect organs. In the setting of serious viral infection and tissue damage, XRx-101 can act to inhibit xanthine oxidase expression due to hypoxia or tissue destruction, therefore preventing increased serum uric acid concentration from reaching saturation levels at which uric acid crystals could trigger an acute organ injury. Most importantly, excipients in the formulation such as L-arginine, a basic amino acid and nitric oxide source, can increase the aqueous solubility of uric acid thereby also decreasing crystal formation associated with tumor lysis-like syndrome due to COVID-19 infections. L-arginine has been shown to protect against kidney injury, in the setting of ischemia reperfusion injury. **We believe that XRx-101 has the potential to be a front-line treatment for severe cases of COVID-19 and to decrease morbidity and mortality in hospitalized COVID-19 patients.**

Significant Partnership with World Experts in Kidney Diseases

On August 4, **XORTX** announced a partnership with Mount Sinai hospital in New York City to study the incidence of AKI and Hyperuricemia in patients hospitalized with COVID-19. This partnership with world experts in AKI adds credibility for the Company and could provide valuable insight to best determine a potential therapeutic treatment. This announcement for the first time highlights the observation and discovery that a majority of hospitalized COVID-19 patients have serum uric acid levels known to be associated with AKI. Indirectly, **XORTX** is joining a network of individuals and organizations involved with artificial intelligence-enabled clinical diagnostic solutions for kidney disease. We believe this network of capabilities could lead to define an optimal treatment. The alignment of Mount Sinai with **XORTX** could potentially outline a greater relationship with a quick access to a pool of patients and quantify the role of xanthine oxidase as a potential treatment option in AKI in COVID-19 patients. Other global academic centers are now collaborating on this effort.

XRx-101- The Only Drug Being Developed for COVID-19 Patients to Address AKI

Since >30% of people infected also had diabetes as co-morbidity, it is plausible that uric acid is also elevated and that XRx-101 from **XORTX** could potentially become a valid treatment. The elevated uric acid is highly correlated with inflammation which has been the primary diagnostic among all the more infected people with the virus which then leads to a worsen clinical outcome. Studies from COVID-19 have showed a strong association between elevated IL-6 and CRP (Creatinine Reactive Protein) inflammation markers and worsening outcomes leading to the Intensive Care or death. A recent study from Hirsh (reference 31), analyzed health records of 5,449 hospitalized patients showed that 36.6% developed AKI. Among those patients with AKI, 35% died, 26% were discharged and 39% are still hospitalized as of the publishing of this Report. AKI occurs frequently among patients with COVID-19 disease. In a recent study conducted at Mount Sinai Hospital in New York (source:

XORTX press release) the incidence of AKI and elevated uric acid among over 1,100 individuals, was more than 60%. The criteria for high uric acid are a serum concentration greater than 7 mg/dL – a concentration commensurate with crystalluria driven AKI. This is much higher than normally seen in a non-pandemic situation. A number of studies have demonstrated that xanthine oxidase inhibitors can decrease IL-6 inflammation markers.

POST COVID-19 OPPORTUNITY – A MUCH LARGER MARKET OPPORTUNITY

Excluding severe patients hospitalized with the COVID-19 pandemic, AKI is a very significant health issue and impacts annually more than three million people in the U.S., Europe and Japan. Mortality is also very high and reaches an estimated 700,000 deaths per year. More than 4% of hospital admissions and 40% of critical care admissions are AKI related in the U.S.

Depending on the severity and the cause of renal injury, mortality ranges from 10%-70% depending on countries around the world. According to the Center for Disease Control (U.S.), AKI direct healthcare costs are estimated to be in excess of US$10 billion in the U.S. alone. AKI patients that require dialysis have usually the worst clinical outcome. We believe this could be a unique opportunity for **XORTX** since currently no drugs are approved for AKI and XRx-101 is the most advanced drug for this indication.

Current Treatment Options for AKI

Even before COVID-19, the only treatment option for AKI was either renal therapy and/or supportive care. While there are no currently approved treatments for AKI, physicians will use nutrition and a combination of drugs to reduce the amount of phosphorus and potassium in the blood. When kidneys are not able to reduce these substances, accumulation may lead to kidney failure and dialysis would be required.

Current Drugs in Development for Acute Kidney Injury

Sentien Biotechnologies, Inc. (Private): Sentien has been conducting a Phase 1-2 trial for the last two years with a goal of delivering stems cells during renal therapy. This novel approach requires much more work and there is no past clinical history to substantiate that it could reverse or improve kidney functions. Additionally, there has been no recent news on the status of the clinical trial.

AM-Pharma B.V. (Private): AM-Pharma is also seeking to start a Phase 3 trial for the treatment for AKI with its proprietary recombinant human Alkaline Phosphatase. **AM-Pharma** has been assembling funds to start a large 1,400 patients with sepsis-associated AKI. In 2018, **AM-Pharma** reported mixed Phase 2 results (approximately 300 patients) which did not show any benefits for kidney disease. Founded more than 20 years ago, **AM-Pharma** has taken a long time to get to this stage and has modified its drug formulation along the way. We are not really sure why they would conduct a Phase 3 clinical trial when initial results were less than convincing.

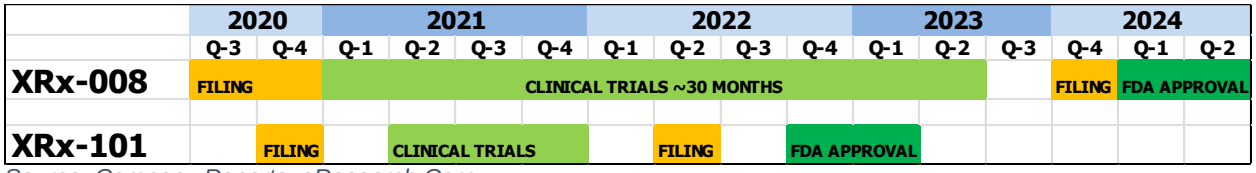
Patents

XORTX has exclusive licenses to three U.S. granted patents with claims to the use of all uric acid lowering agents to treat high blood pressure, insulin resistance or diabetic nephropathy and four U.S. patent applications with similar claims for the treatment of metabolic syndrome, diabetes, fatty liver disease as well as a composition of matter patent for formulations of xanthine oxidase inhibitors until 2034. Patent applications have also been submitted to Europe, Japan, and other jurisdictions. **XORTX** has expanded its claims to cover AKI for COVID-19 patients which could ultimately be expanded to a larger patient population with unmet medical needs. The value of patents for repurposed drugs is not so critical in the case of orphan programs given the FDA would grant the Company with a seven-year marketing exclusivity in the U.S. which would be more than adequate to generate huge rewards.

Clinical Development and Regulatory Strategy

Both XRx-008 and XRx-101 are in the last stage of clinical development before FDA approval. Both drugs are reformulation of Oxypurinol which has been previously approved and a number of studies completed in the last few decades could be used for the regulatory filing by **XORTX**. Oxypurinol is not yet approved for marketing anywhere in the world. For this reason, the regulatory/clinical pathway falls under the 505(b)(2) pathway supporting a reformulation of Oxypurinol with increased bioavailability and superior tolerability to Allopurinol. The current issue with most innovative drugs when first developed is usually their poor bio-availability and higher side effects. This represents a great opportunity for companies like **XORTX** to find an optimized formulation with a combination of ingredients providing increased benefits for patients. Under this FDA regulatory strategy the Company would receive a seven year marketing exclusivity (10 years in Europe/Japan), providing a substantial return on their investment. **XORTX** is now proceeding to obtain funding from multiple organizations in the U.S./Canada and has already selected Lonza group as the manufacturing for clinical supplies. **XORTX** is ready to go and has already submitted to the FDA a Coronavirus Treatment Accelerated Program and data plan regarding a COVID-19 package and received guidance to submit a pre-IND package for review.

Figure 9: Pipeline and Development Timelines



Source: Company Reports; eResearch Corp.

Product Development Strategy Focused On Less Risk and Higher Rewards

In the last couple of decades, drug repurposing has been a particularly attractive strategy for orphan diseases, where the economics for developing a new drug was prohibitive and time consuming. In the U.S., a number of initiatives were introduced such as tax waiving, fast-track approval, grants and regulatory fee waivers. For example, fexinidazole (Sanofi) was the first oral-only drug approved for treating advanced-stage sleeping sickness and Sanofi spent approximately US$60 million in its development compared to developing a new drug which would have required US$1-3 billion and 12 years to develop. Interestingly, patents for these drugs are less crucial for orphan indications given they are secured a period of marketing exclusivity with the approval. Repurposing a low-cost, off-patent drug might even be desired to capture a higher return on investment.

Repurposed Drugs Benefits:

- Time to market: Reduced significantly with fewer clinical trials and patients required to obtain FDA approval;
- Cost Advantage: Manufacturing has already been fully optimized and usually raw materials could be less expensive;
- Revenue potential: For orphan diseases, pricing is very high even providing significant revenues and higher margins than large diseases. Marketing exclusivity in the U.S. is seven years and 10 years in Europe/Japan. Very few competitors in the kidney disease market could translate into higher revenues;
- Probability of clinical trial success: Risk of Phase 2 and Phase 3 successes are substantially increased because the drug has been previously approved. Real life data and clinical experience can support **XORTX** for the regulatory filing, eliminating safety issues.

Figure 10: List of Successful Repurposed Drugs

BRAND NAME	ORIGINAL INDICATION	NEW INDICATION (YEAR)	PHARMA COMPANY	ANNUAL SALES[a]
GEMZAR	Anti-viral	Various Cancers (Various)	Lilly	$1.72B
EVISTA	Osteoporosis	Invasive Breast Cancer (2007)	Lilly	$1.09B[b]
PROSCAR[c]	Hypertension	BPH (1992)	Merck	$741.4M
PROPECIA[c]	Hypertension	Male Pattern Baldness (1997)	Merck	$429.1M
REVLIMID	Structural Analogue[d]	Multiple Myeloma (2006)	Celgene	$4.28B
REVATIO[e]	Angina/ED	PA Hypertension (2005)	Pfizer	$525.0M
RITUXAN	Various Cancers	Rheumatoid Arthritis (2004)	Biogen/IDEC[f] & Roche	$1.2B[g]
TECFIDERA	Psoriasis	Multiple Sclerosis (2013)	Biogen/IDEC[f]	$2.91B
THALOMID	Anti-Nausea	Leprosy (1998)	Celgene	
		Multiple Myeloma (2006)	Celgene	$535.2M
VIAGRA[e]	Angina	Erectile Dysfunction (1998)	Pfizer	$2.05B

[a] Actually peak annual sales
[b] Peak annual sales includes both osteoporosis and breast cancer numbers
[c] Both brand names are the identical drug Finasteride
[d] This is a structural analogue of Thalomid – see text for discussion of why included
[e] Both brand names are the identical drug Sildenafil
[f] On March 23, 2015 Biogen/IDEC was renamed simply as Biogen

Source: Steven Naylor, Mayo Clinic, Drug Discovery, 2015Therapeutic drug repurposing, repositioning and rescue: Part II: Business review

FINANCIAL STATEMENT ASSUMPTIONS

Revenue Model Assumptions

We built a detailed patient-based market model for each product until 2030. Given the size and infrastructure of the company, **XORTX** will likely seek to license the manufacturing and commercialization for all products.

Revenue Model for XRx-008 for the treatment of ADPKD

For XRx-008, we assume a commercial launch in 2024 for ADPKD. We expect U.S. peak sales of US$658 million in 2028E for the distribution partner and royalties close to US$100 million for **XORTX** based on a royalty rate of 15%. In the U.S., we assume net pricing of $20,000/year, which we believe very conservative given the disease has a fatal outcome. Ex-U.S., we include a royalty of 10% (based on lower pricing environment) beginning in 2025E. In 2030, **XORTX** could generate royalties of US$145 million (non-probability adjusted). The model includes potential license upfront and milestones payments totaling US$187 million for the US/EU27 geographical regions. Please refer below for our detailed revenue model.

Figure 11: Revenue Model for XRx-008

ADPKD - Revenue Build for XRx-008												US$M	
												4-Aug	
US		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Population Millions		335.0	339.0	343.1	347.2	351.4	355.6	359.9	364.2	368.5	373.0	377.4	Per CDC
Prevalence			139,676	141,032	142,407	143,801	145,215	146,798	148,401	150,176	151,973	153,791	ADPKD org
Incidence			2,780	2,813	2,847	2,881	2,916	2,951	2,986	3,022	3,058	3,095	ADPKD org
Deaths			1,425	1,438	1,453	1,467	1,333	1,348	1,211	1,226	1,240	1,255	ADPKD org
Net Patients with ADPKD			141,032	142,407	143,801	145,215	146,798	148,401	150,176	151,973	153,791	155,631	ADPKD org
MARKET SHARE			0.0%	0.0%	0.0%	5.0%	7.0%	10.0%	15.0%	20.0%	20.0%	20.0%	CC estimate
Patients on therapy			0	0	0	7,261	10,276	14,840	22,526	30,395	30,758	31,126	
ANNUAL TREATMENT COST			$20,000	$20,000	$20,000	$20,000	$20,400	$20,808	$21,224	$21,649	$22,082	$22,523	CC estimate
Total US$M Revenues			$0	$0	$0	$145	$210	$309	$478	$658	$679	$701	
TOTAL ROYALTIES US$M	RATE	15%	0.0	0.0	0.0	21.8	31.4	46.3	71.7	98.7	101.9	105.2	
COMMERCIAL PARTNERSHIP													
UPFRONT				33.3									
CLIN/REG MILESTONES (3)					33.3	33.3	33.3						
COMMERCIAL MILESTONE													
TOTAL REVENUES (ROYALTIES+ MILESTONES)			0.0	33.3	33.3	55.1	64.8	46.3	71.7	98.7	101.9	105.2	
EU-27		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Population Millions		520.0	522.6	525.2	527.8	530.5	533.1	535.8	538.5	541.2	543.9	546.6	
Prevalence			215,311	217,401	219,490	221,580	223,671	225,990	228,310	230,864	233,419	235,976	
Incidence			4,285	4,307	4,328	4,350	4,372	4,394	4,415	4,438	4,460	4,482	
Deaths			2,196	2,217	2,238	2,259	2,052	2,073	1,862	1,882	1,903	1,924	
Net Patients with ADPKD			217,401	219,490	221,580	223,671	225,990	228,310	230,864	233,419	235,976	238,534	
MARKET SHARE			0.0%	0.0%	0.0%	0.0%	3.8%	5.3%	7.5%	11.3%	15.0%	15.0%	
Patients on therapy			0	0	0	0	8,475	11,986	17,315	26,260	35,396	35,780	
ANNUAL TREATMENT COST			$10,000	$10,000	$10,000	$10,000	$10,000	$10,200	$10,404	$10,612	$10,824	$11,041	
Total US$M Revenues			$0	$0	$0	$0	$85	$122	$180	$279	$383	$395	
TOTAL REVENUES US$M	RATE	10%	0.0	0.0	0.0	0.0	8.5	12.2	18.0	27.9	38.3	39.5	
COMMERCIAL PARTNERSHIP													
UPFRONT					13.3								
CLIN/REG MILESTONES (3)						13.3	13.3	13.3					
COMMERCIAL MILESTONE													
TOTAL REVENUES (ROYALTIES+ MILESTONES)			0.0	0.0	13.3	13.3	21.8	25.6	18.0	27.9	38.3	39.5	
TOTAL Revenues for Xortx		US$M	0.0	33.3	46.6	68.4	86.6	71.9	89.7	126.6	140.2	144.7	

Source: eResearch Corp.

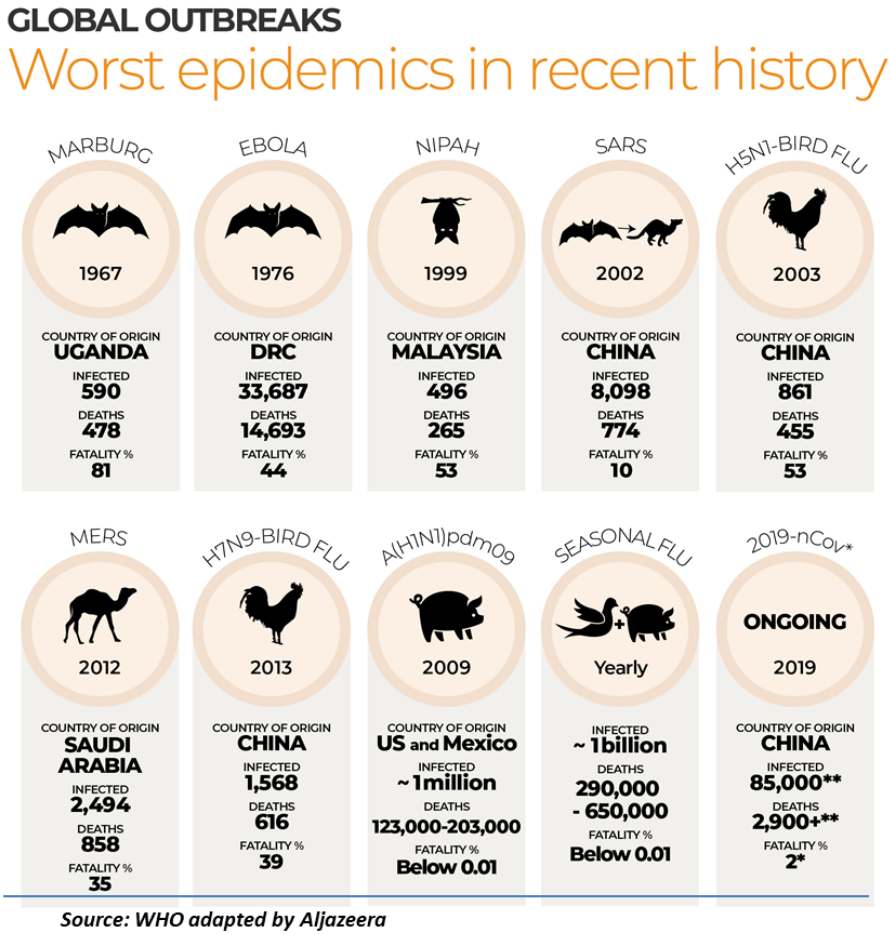
Revenue Model- XRx-101 AKI in COVID-19 patients

While the debate continues as the timing or prevalence of the next big pandemic outbreak, we assume the world will live through other virus pandemics. So far in the last 50 years we have seen eight major outbreaks in addition to the seasonal flu.

Given the uncertainty of the prevalence of next wave of COVID-19, we have assumed a lower number of cases which would decline over time. We also assumed a model based on acute patients being hospitalized. So far there are no other drug treatments in development and current drugs for treating diabetes or hypertension could provide temporary benefits at best.

For XRx-101, we assume a launch in mid-2023 for AKI in COVID-19 patients. Revenues could vary from year to year and potentially reach more than US$300 million for the commercial partner in the U.S. with royalty revenues of $30-50 million based on a royalty rate of 15%. In the U.S., we assume net pricing of $20,000/year, given the economic value of the treatment. Ex-U.S., we include a royalty of 10% on lower pricing (50% less) beginning in 2024 plus license fees and milestone payments, which we believe is reasonable for this type of product in the current pricing environment. Please refer below for our detailed revenue model.

Figure 12: Global Epidemics



Source: WHO adapted by Aljazeera

Figure 13: Revenue Model for XRx-101

Acute Kidney Injury for Covid 19 - Revenue Build for XRx-101												US$M
												4-Aug
US		**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	
Population Millions		**335.0**	**339.0**	**343.1**	**347.2**	**351.4**	**355.6**	**359.9**	**364.2**	**368.5**	**373.0**	**377.4**	Per CDC
Nb of virus infections 000's		**6,000**	**4,500**	**3,375**	**2,531**	**1,898**	**1,424**	**1,068**	**801**	**601**	**451**	**338**	CC estimate
Hospitalizations 000's		**840**	**630**	**473**	**354**	**266**	**199**	**150**	**112**	**84**	**63**	**47**	Article summary from Medscape
% Patients to ICU care		**35%**	**35%**	**35%**	**35%**	**35%**	**35%**	**35%**	**35%**	**35%**	**35%**	**35%**	Article summary from Medscape
Intensive Care patients		**294,000**	**220,500**	**165,375**	**124,031**	**93,023**	**69,768**	**52,326**	**39,244**	**29,433**	**22,075**	**16,556**	Article summary from Medscape
% Patients with AKI		**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	Article summary from Medscape
Patients available for treatments		**108,780**	**81,585**	**61,189**	**45,892**	**34,419**	**25,814**	**19,361**	**14,520**	**10,890**	**8,168**	**6,126**	
MARKET SHARE			**0.0%**	**0.0%**	**25.0%**	**50.0%**	**50.0%**	**50.0%**	**50.0%**	**50.0%**	**50.0%**	**50.0%**	CC estimate
Patients on therapy			0	0	11,473	17,209	12,907	9,680	7,260	5,445	4,084	3,063	
ANNUAL TREATMENT COST			**$20,000**	**$20,000**	**$20,000**	**$20,400**	**$20,808**	**$21,224**	**$21,649**	**$22,082**	**$22,523**	**$22,974**	CC estimate
Total US$M Revenues			**$0**	**$0**	**$229**	**$351**	**$269**	**$205**	**$157**	**$120**	**$92**	**$70**	
TOTAL ROYALTIES US$M	**RATE**	**15%**	**0.0**	**0.0**	**34.4**	**52.7**	**40.3**	**30.8**	**23.6**	**18.0**	**13.8**	**10.6**	
COMMERCIAL PARTNERSHIP													
UPFRONT				17.8									
CLIN/REG MILESTONES (3)					17.8	17.8	17.8						
COMMERCIAL MILESTONE													
TOTAL REVENUES (ROYALTIES+ MILESTONES)			**0.0**	**17.8**	**52.2**	**70.4**	**58.1**	**30.8**	**23.6**	**18.0**	**13.8**	**10.6**	
EU-27		**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	
Population Millions		**520.0**	**522.6**	**525.2**	**527.8**	**530.5**	**533.1**	**535.8**	**538.5**	**541.2**	**543.9**	**546.6**	
Nb of virus infections 000's		**2,500**	**1,875**	**1,406**	**1,055**	**791**	**593**	**445**	**334**	**250**	**188**	**141**	
Hospitalizations 000's		**350**	**263**	**197**	**148**	**111**	**83**	**62**	**47**	**35**	**26**	**20**	
% Patients to ICU care		**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	**30%**	
Intensive Care patients		**105,000**	**78,750**	**59,063**	**44,297**	**33,223**	**24,917**	**18,688**	**14,016**	**10,512**	**7,884**	**5,913**	
% Patients with AKI		**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	**37%**	
Patients available for treatments		**38,850**	**29,138**	**21,853**	**16,390**	**12,292**	**9,219**	**6,914**	**5,186**	**3,889**	**2,917**	**2,188**	
MARKET SHARE			**0.0%**	**0.0%**	**12.5%**	**25.0%**	**25.0%**	**25.0%**	**25.0%**	**25.0%**	**25.0%**	**25.0%**	
Patients on therapy			29,138	21,853	16,390	12,292	9,219	6,914	5,186	3,889	2,917	2,188	
ANNUAL TREATMENT COST			**$0**	**$0**	**$10,000**	**$10,200**	**$10,404**	**$10,612**	**$10,824**	**$11,041**	**$11,262**	**$11,487**	
Total US$M Revenues			**$0**	**$0**	**$164**	**$125**	**$96**	**$73**	**$56**	**$43**	**$33**	**$25**	
TOTAL ROYALTIES US$M	**RATE**	**10%**	**0.0**	**0.0**	**16.4**	**12.5**	**9.6**	**7.3**	**5.6**	**4.3**	**3.3**	**2.5**	
COMMERCIAL PARTNERSHIP													
UPFRONT					4.2								
CLIN/REG MILESTONES (3)						4.2	4.2	4.2					
COMMERCIAL MILESTONE													
TOTAL REVENUES (ROYALTIES+ MILESTONES)			**0.0**	**0.0**	**20.6**	**16.8**	**13.8**	**11.6**	**5.6**	**4.3**	**3.3**	**2.5**	
TOTAL Revenues for Xortx		**US$M**	**0.0**	**17.8**	**72.8**	**87.2**	**71.9**	**42.4**	**29.2**	**22.3**	**17.1**	**13.1**	

Source: eResearch Corp.

Income Statement Assumptions – Using C$M

R&D: We are including expenses for XRx-008 of C$30 million and another C$15 million for XRx-101 to reach an FDA approval and not factoring the interest from a commercial partner prior the approval. G&A expenses are likely to be minimal and represent less than 20% of R&D given the culture of the Company to focus on supporting a small infrastructure.

Taxes

We model loss per share through 2022 being the first year of profitable operations following milestone payments from partnerships. Assuming the Company can utilize some net operating losses, we step up the tax rate from 30% in FY2022E to 40% in FY2025E and beyond.

Shares Outstanding

XORTX has currently 81.2 million shares and we model approximately 20 million shares financing in 2020E and every year until 2023 to finance the R&D programs estimated at approximately C$45 million. We estimate the number of shares could reach approximately 160 million in 2023.

Balance sheet

We estimate **XORTX** will require different sources of financings or will seek a potential commercial partnership to complete clinical trials. If the Company was able to obtain a bridge financing to complete the information package and clinical supplies for an FDA decision to initiate a clinical trial for XRx-008, this could raise the attractiveness for a commercial partnership. The expectancy of a Phase 3 success is very high for this product plus the seven years of market exclusivity has tremendous value for a large pharmaceutical company seeking to access this high margin business.

Figure 14: Income Statement Actuals & Estimates

INCOME STATEMENT - XORTX THERAPEUTICS INC.													C$M
	2018A	2019A	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
ROYALTIES XRx-008							29.4	53.9	79.0	121.1	170.9	189.3	195.3
OTHER REVENUES (MILESTONES, UPFRONT)					45.0	63.0	63.0	63.0	18.0				
ROYALTIES XRx-101						22.1	16.9	12.9	9.9	7.6	5.8	4.4	3.4
OTHER REVENUES (MILESTONES, UPFRONT)					24.0	76.2	100.8	84.1	47.3	31.8	24.3	18.6	14.2
TOTAL REVENUES					**69.0**	**161.3**	**210.1**	**213.9**	**154.3**	**160.5**	**201.0**	**212.3**	**212.9**
COST OF SALES													
GROSS MARGIN					**69.0**	**161.3**	**210.1**	**213.9**	**154.3**	**160.5**	**201.0**	**212.3**	**212.9**
RESEARCH & DEVELOPMENT	0.3	0.1	1.0	2.0	10.0	15.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
ADMINISTRATION	0.9	0.4	0.7	1.0	2.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
OPEX	**1.2**	**0.5**	**1.7**	**3.0**	**12.0**	**18.0**	**24.0**	**24.0**	**24.0**	**24.0**	**24.0**	**24.0**	**24.0**
EBITDA	**-1.2**	**-0.5**	**-1.7**	**-3.0**	**57.0**	**143.3**	**186.1**	**189.9**	**130.3**	**136.5**	**177.0**	**188.3**	**188.9**
FINANCING /LISTING EXPENSES	**2.6**	**0.1**											
OTHER													
INCOME (LOSS) BEFORE TAXES	**-3.8**	**-0.6**	**-1.7**	**-3.0**	**57.0**	**143.3**	**186.1**	**189.9**	**130.3**	**136.5**	**177.0**	**188.3**	**188.9**
INCOME TAXES					17.1	43.0	55.8	76.0	52.1	54.6	70.8	75.3	75.6
Tax rate					30%	30%	30%	40%	40%	40%	40%	40%	40%
INCOME (LOSS) BEFORE TAXES	**-3.8**	**-0.6**	**-1.7**	**-3.0**	**39.9**	**100.3**	**130.3**	**113.9**	**78.2**	**81.9**	**106.2**	**113.0**	**113.4**
Weighted average nb shares (thousands)	61.8	62.9	91.2	111.2	131.2	151.2	160.0	160.0	160.0	160.0	160.0	160.0	160.0
INCOME (LOSS) PER SHARE	**-0.06**	**-0.01**	**-0.02**	**-0.03**	**0.30**	**0.66**	**0.81**	**0.71**	**0.49**	**0.51**	**0.66**	**0.71**	**0.71**

Source: eResearch Corp.

VALUATION

We see three different approaches to valuation this small biotech company with two late stage assets:

a) Comparable to Peers;
b) Comparable to Early stage companies who became public in 2020; and
c) Discounted Cash Flow which will be the preferred valuation approach.

XORTX is Significantly Undervalued When Compared to Its Peers

We have compiled a list of 12 U.S. public companies which are pre-revenue, developing drugs in similar diseases (kidney, liver, NASH) and/or orphan drugs focus. As shown below we are comparing the firm value versus a proprietary score attributed for the pipeline based on the stage of development for each program. In the last column, the resulting number indicates the value in US$M that the market attributes to the pipeline. The median value for the pipeline is US$14 million/point. When extrapolated to **XORTX**, the pipeline would have a score of 20 points giving an estimated value of US$273 million or US$2.28/share. There is a major gap between the current price of C$0.18 and the market value attributed to its peers.

Figure 15: COMPARABLE PRE-REVENUES COMPANIES IN SIMILAR DISEASES / ORPHAN DRUGS- US$M (except per share data)

COMPANY		US$M		NB OF PROGRAMS BY STAGE OF DEVELOPMENT									
	Symbol	Market Cap	Firm Value	1	1/2	2	2b	3	NDA	Market	Pipeline Value Points	Firm Value/ Pipeline Points	
		1	2								3	4= 3/2	
89bio Inc.	ETNB	427	240			1					10	$24.0	
Akero Therapeutics Inc,	AKRO	1,221	869			1					10	$86.9	
Albireo Pharma Inc.	ALBO	367	236					2			32	$7.4	
Ardelyx Inc.	ARDX	569	346			1		2	1	1	80	$4.3	
Aurinia Pharmaceutical Inc.	AUPH	1,636	1,350			1		1	1		44	$30.7	
Cara Therapeutics Inc.	CARA	821	641			3	1	2	1		92	$7.0	
Kadmon Holdings Inc	KDMN	683	543	2		2			1		44	$12.3	
Medicinova Inc.	MNOV	238	177			4	1	2			84	$2.1	
Pliant Therapeutics Inc.	PLRX	773	523	1		2					23	$22.7	
Reata harma Inc.	RETA	5,021	4,046	1		3		3			81	$50.0	
Rhythm Pharma Inc	RYTM	951	659			1		1	1		44	$15.0	
Viking Therapeutics Inc	VKTX	498	229			1	1				22	$10.4	
Source: Morningstar, Biopharmacatalyst, Company reports										Median value		$13.7	
Criterias for companies: Pre-revenues biotech companies in kidney, liver, NASH diseases or focused on orphan drugs.													
(1) market capitalization of companies as of July 15, 2020													
(2) Firm value is defined as Market Cap - Cash + Debt													
(3) Pipeline Value- Proprietary methodology to determine value of the pipeline and scores more points with the later stage													
(4) Firm Value / Pipeline value determines how investors percieve value for the pipeline.													
												Expected Value	
Xortx Therapeutics Inc.	**XRX**	**9**	**8**			**2**					**20**	**$273.2**	Firm Value
												120	Nb Mil Shares
												$2.28	Value/ Share

Source 1: Morningstar, Biopharmacatalyst, Company Reports, eResearch Corp.

High Valuation of COVID-19 Biotech Companies - Double Sword

Second Valuation Method Based on recent IPO in 2020. The biotech IPO party is rolling on through summer of 2020 as more IPOs of early stage biotech are collecting huge funds for their technology and products. The sector has been uplifted by COVID-19 and the hope to find a vaccine or drugs has never been greater. While this is extremely encouraging to see governments funding new vaccine developments, companies have seized the moment to raise capital at higher valuations than have been realized in the past. However the caution is that many companies saw the window to raise funds even though they were in their early stage of development which is creating a huge valuation gap between current public companies and new public companies. In a small sample of 10 companies during last two months, companies in preclinical or Phase 1 and 2 trials raised an average of US$213 million at a median valuation of US$747 million. We believe the development risk and the time required to achieve an approval is at least a decade away, which make these companies overvalued. If we compare to **XORTX** with a market cap of $14 million with two late stage Phase 3 drugs for a potential first drug launch in 2023, there seems to be a major gap in corporate valuation.

Discounted Cash Flow (DCF)

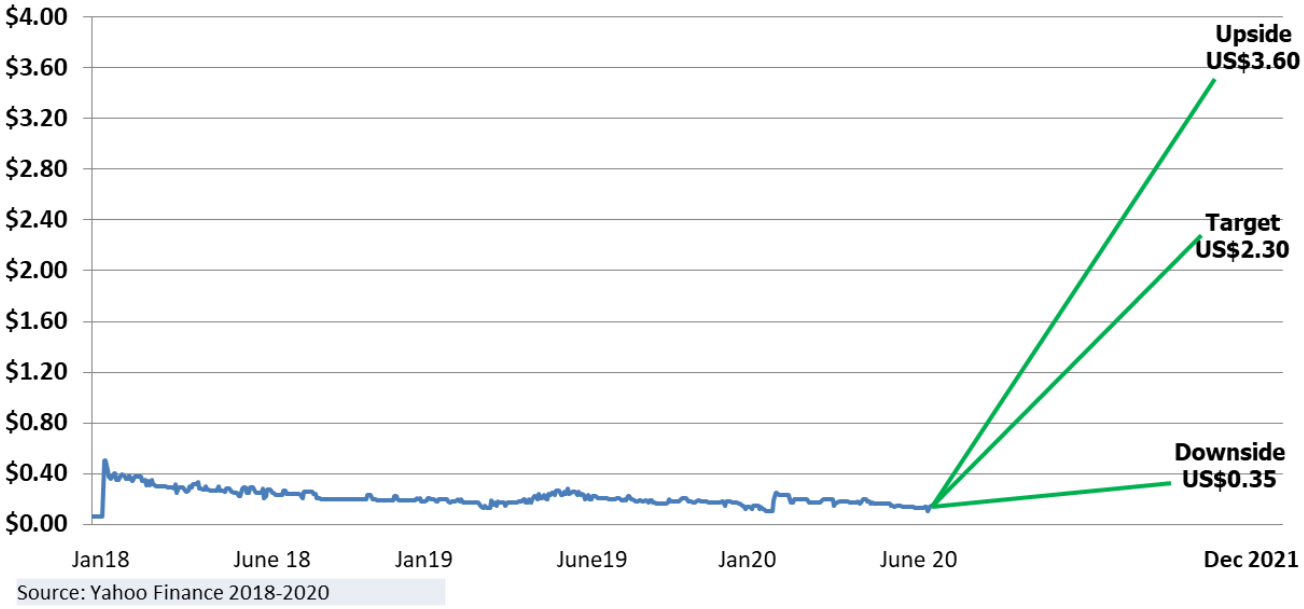
To determine our price target, we are using a discounted cash flow (DCF) methodology. For our DCF model, we: 1) modelled sales for a defined period through 2030; 2) assumed an 85% probability of success for XRx-008 candidate, for patients with ADPKD including revenues from the U.S. and EU-27 at a discounted prices of US$20,000 per year; and 3) a 50% probability success for AKI indication for COVID-19. Currently there is no pharmaceutical treatment for AKI and if the short trial for COVID-19 is successful, we believe the FDA would expand to AKI in hospital settings as a standard of care; an upside that we have not accounted for in our target price. We believe we could have added the AKI indication which occurs annually regardless of COVID-19 in more than 5 million of cases per year. We discounted after-tax profits back to the end of 2021 at a discount rate of 20%, which we believe is a reasonable estimate for the Company's weighted average cost of capital (WACC).

XORTX - Totally Undervalued With the Discounted Model Scenarios

We have developed three DCF model scenarios for which the pipeline could develop.

- First, the target price of US$2.30 is based on a DCF value model adjusted for probability of success. It assumes XRx-008 has an 85% chance of being approved in 2024 for ADPKD and XRx-101 has a 50% chance of being approved in AKI for COVID-19 patients.
- Second, the Upside scenario with a target price of US$3.60 assumes a 90% chance of approval for XRx-008 in ADPKD, 75% chance of approval of XRx-101 for AKI in COVID-19 patients and a potential expanded approval for AKI in normal hospital settings in intensive care settings with a 40% success rate.
- Third, target price of $0.35 for the Downside scenario represents the adjusted net present value of no approval for XRx-008 and only a 30% chance approval of XRx-101 in AKI for COVID-19 patients.

Figure 16: Risk/ Reward Scenarios - Long Term Market Potential Should Outweigh Near-Term Funding Risk



Conclusion – Fresh Perspective for Kidney Diseases

There are no doubts that kidney disease represents a huge financial burden around the world. With the increase in diabetes, obesity, cardiac issues and metabolic syndrome, we expect a significant increase in the number of people requiring renal therapies. The progression of kidney issues leads in many cases to AKI and renal therapy for life or a major transplant.

Currently, only one drug is approved for ADPKD, for a small group of patients, while the bulk of patients dealing with diabetic nephropathy and chronic kidney disease have very few options. Kidney disease usually evolves over time and we believe that we have failed to recognize the best biomarker so that drug companies can develop an effective treatment. So far very few companies are developing drugs in the sector leaving the door to companies who have a different perspective.

We believe the science and strong correlation of studies continue to show correlation between elevated uric acid and progression of kidney disease. **XORTX** has developed an innovative formulation of an approved drug and repurposed the drug for diseases that require the lowering of uric acid to reverse the disease. We strongly expect **XORTX** drugs could be useful in helping patients with ADPKD, AKI and potentially expanding to diabetic nephropathy. All these diseases have one point in common: elevated uric acid. Both drugs XRx-008 and XRx-101 have shown benefits and have a very good safety profile. **Therapeutic intervention to reduce uric acid could provide a treatment modality that ultimately reduces inflammation and modifies the underlying disease pathology.**

APPENDIX A: KEY MANAGEMENT PERSONNEL

Allen Davidoff, President and Chief Executive Officer (CEO)

- Founder, President and CEO since July 2012.
- Dr. Davidoff has more than 17 years of experience, starting in the laboratories as a scientist to Vice President Product Development before co-founding his first biotech company (Stem Cell Therapeutics). Dr. Davidoff has experience in clinical studies and regulatory filing with senior management oversights. He was directly involved in two investigational new drug applications, Phase 1 and 2 clinical studies and one new drug application to the FDA.
- Prior to forming **XORTX**, Dr. Davidoff was the Chief Scientific Officer, Vice President Product Development and co-founder of Stem Cell Therapeutics Corp. (2005-2012) which became Trillium TRIL:NASDAQ and Senior Scientist and was Head of Pharmacology at Cardiome Pharma Corp. Dr. Davidoff received his PhD in Cardiovascular Physiology from the University of Calgary.

James Fairbairn, Chief Financial Officer

- Mr. Fairbairn has 20+ years in senior finance roles with emerging companies. He is a Chartered Professional Accountant (1987) and is an Institute-certified Director.

Brian Mangal, Biostatistics, Director Business Development, Product Development

- Mr. Mangal was the former Director of Biostatistics at Cardiome Pharma Corp. His clinical development experience includes design, analysis and reporting on over 50 clinical trials, three FDA submissions, one TPD (Therapeutic Products Directorate) submission, and a successful EMEA (European Medicines Agency) submission.
- Prior to Cardiome, Mr. Mangal worked at Everest Clinical Research, specializing in dealings with the National Institute of Health in the U.S. and as a Biostatistician at Pharmacia/Pfizer where he worked on the successful New Drug Application for Linezolid and numerous successful trials with Celecoxib.

Alan F. Moore, Executive Consultant: Clinical and Regulatory Affairs

- Dr. Moore has extensive clinical development experience and 23 years of senior management experience in pharmaceutical R&D including most recently as CEO of BetaStem Inc. During his esteemed career, he has completed 11 IND (investigational new drug) applications or supplemental IND's, 15 phase I studies, 12 phase II studies, seven phase III studies and two new drug applications.

Anthony J. Giovinazzo, Special Advisor

- Mr. Giovinazzo is an internationally recognized expert in intellectual property defense, drug development and commercialization, including numerous licensing agreements, with more than 25 years' experience in central nervous system diseases.
- He was most recently, the co-inventor, Chief Executive Officer and Director of Cynapsus Therapeutics, a NASDAQ listed specialty pharmaceutical company that developed the first successful sublingual apomorphine thin film strip for Parkinson's disease approved by the FDA in May 2020. Cynapsus was acquired by Sunovion Pharmaceuticals for $841M.

Dr. David Sans, Director, Corporate Development

- Recently joined **XORTX** in August 2020, Dr. Sans has more than 15 years of pharmaceutical experience working with large pharmaceutical companies such as Novartis, Pfizer and ImClone. He has also spent more than six years with Summer Street Research Partners in Boston as head of investment banking.
- Dr. Sans is a highly qualified individual with a Board Certified in Regenerative Medicine from the American Board of Regenerative Medicine, a Master's Degree in Chemical Engineering, a Ph.D. in Life Sciences and a MBA in Business Law.

APPENDIX B: RISKS

Regulatory Risks:

- There is regulatory risk that **XORTX** could not receive regulatory approval for XRx-008 and XRx-101 or other products in development and that regulatory approval may be delayed once applications are submitted. Additionally, healthcare reforms in the U.S. or other countries may impact potential commercial sales.

Commercial Risks:

- There is commercial risk for **XORTX** to successfully market and sell XRx-008, XRx-101 and any other pipeline products that receive regulatory approval. Currently, the Company does not market any products and it needs to build a sales and marketing team as well as establish distribution infrastructure. Other risks include physician acceptance and adoption of a novel therapy for kidney diseases, government and payer reimbursement in line with expectations and potential governmental price controls.

Clinical Development Risks:

- There are development risks associated with clinical studies and potential delays in the start of trials. **XORTX** is currently investigating a number of drugs in various stages of clinical development. Enrollment may take a significant amount of time in clinical trials and trials may be postponed or delayed for a variety of reasons. Additionally, the outcomes of the trials are difficult to predict and could fail for any number of reasons including safety and efficacy. Reliance on third parties to conduct future clinical trials reduces control and necessitates that contract agreements be honored.

Manufacturing Risks:

- **XORTX** does not own nor operate its own manufacturing facilities. Third-party contract manufacturers are utilized for manufacturing in clinical testing, and agreements would need to be implemented for potential future commercial production. The Company could face issues of timing and costs, which present risks, as well as the ability to manufacture a consistent product. Manufacturing facilities are highly regulated, subjecting them to risk of closure or manufacturing delay.

Financial Risks:

- **XORTX** has incurred operating losses since its inception and, in our view, may not achieve profitability for several years. The Company could need to raise capital in the future to sustain operations. Additionally, the stock of biotechnology companies, like all publicly traded companies, is subject to market volatility and liquidity risks if there are small trading floats.

Liability Risks:

- **XORTX's** product candidates may cause undesirable side effects or have other properties that could result in legal action taken by subjects in trials or commercial patients against the Company. Product liability lawsuits are common in the biopharmaceutical industry. The Company is also vulnerable to typical business liability associated with conducting business in a litigious environment.

Intellectual Property Risks:

- **XORTX** maintains intellectual property ownership of or exclusive rights to both issued patents and patent pending applications involving fundamental features of uric acid, methods of use and chemical modification. Issued patents for uric acid formulation and methods of use are anticipated to expire by 2034. The biotechnology industry is litigious, and lawsuits are considered a normal part of doing business. A court might not uphold **XORTX's** intellectual property rights, or it could find that **XORTX** infringed upon another party's property rights. In addition, biotech firms could potentially find loopholes in **XORTX's** intellectual property estate, which might enable them to launch generic versions of **XORTX's** products prior to the expiration of patent protection on these products. If **XORTX** is unable to obtain or protect its intellectual property rights, it may not be able to compete effectively in the commercial market.

APPENDIX C: REFERENCES

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Hold: Stock price expected to trade in line with the current price over the next 12-18 months.
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