
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM 8-K

**CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934**

Date of Report (Date of earliest event reported): **March 31, 2022**

TREVENA, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation)

001-36193
(Commission
File No.)

26-1469215
(IRS Employer
Identification No.)

**955 Chesterbrook Boulevard, Suite 110
Chesterbrook, PA 19087**

(Address of principal executive offices and zip code)

Registrant's telephone number, including area code: **(610) 354-8840**

Not applicable

(Former name or former address, if changed since last report.)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, \$0.001 par value	TRVN	The Nasdaq Stock Market LLC

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter). Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 2.02. Results of Operations and Financial Condition.

On March 31, 2022, Trevena, Inc. (the “Company”) issued a press release announcing its financial results for the quarter and year ended December 31, 2021 and provided an overview of its 2021 and 2022 year-to-date operational highlights. A copy of the press release is furnished hereto as Exhibit 99.1 and incorporated herein by reference.

The information under this caption and contained in the press release attached hereto as Exhibit 99.1 is furnished by the Company in accordance with Securities Exchange Commission Release No. 33-8216. This information shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), or incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act whether made before or after the date of this Current Report, except as shall be expressly set forth by specific reference in such a filing.

Item 7.01 Regulation FD Disclosure

On March 31, 2022, the Company updated its website to include an updated corporate presentation deck. A copy of the updated corporate presentation deck is attached hereto as Exhibit 99.2.

The information set forth on this Item 7.01 and furnished hereto as Exhibit 99.2 shall not be deemed “filed” for purposes of Section 18 of the Exchange Act or incorporated by reference into any of the Company’s filings under the Securities Act or the Exchange Act, whether made before or after the date of this Current Report, except as shall be expressly set forth by specific reference in such a filing.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

<u>Number</u>	<u>Description</u>
<u>99.1</u>	<u>Press Release dated March 31, 2022</u>
<u>99.2</u>	<u>Updated Corporate Presentation Deck dated March 31, 2022</u>
104	The cover page from this Current Report on Form 8-K, formatted in Inline XBRL

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

TREVENA, INC.

Date: March 31, 2022

By: /s/ Barry Shin
Barry Shin
Senior Vice President & Chief Financial Officer

Trevena Reports Fourth Quarter and Full Year 2021 Results

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OLINVYK® utilization gaining traction in key target markets

Seasoned Biopharma Leader Patricia Drake appointed new Chief Commercial Officer

Topline data of OLINVYK vs IV morphine in high-risk subjects demonstrates statistically significant benefit in lowering respiratory depression

\$66.9M of cash at year end 2021

\$40M OLINVYK ex-US royalty-based financing with R-Bridge Healthcare Fund

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Company to host conference call today, March 31st, 2022, at 8:00 a.m. ET

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CHESTERBROOK, PA., Mar. 31, 2022 (GLOBE NEWSWIRE) -- **Trevena, Inc. (Nasdaq: TRVN)**, a biopharmaceutical company focused on the development and commercialization of novel medicines for patients with central nervous system (CNS) disorders, today reported its financial results for the fourth quarter and full year ended December 31, 2021, and provided an overview of its 2021 and 2022 year-to-date operational highlights.

"2021 was an important year for Trevena as we launched OLINVYK in the hospital setting. Our sales and marketing team, led by our new CCO Pattie Drake, adapted to the pandemic headwinds and we are confident the foundation we established positions us well in 2022," said Carrie Bourdow, President and CEO of Trevena. "We also continued to build upon the supportive profile for OLINVYK with positive topline respiratory physiology data announced today, and two additional post-approval studies underway. In addition, TRV027 is being studied in COVID patients by the NIH, with enrollment expanding to international sites, and our novel S1P modulator TRV045 entered clinical studies to support development for diabetic neuropathic pain. We also solidified our financial position and recognized value for an important asset through our ex-US royalty-based financing of up to \$40 million. We are pleased with the continued progress and look forward to discussing results in the near future."

2021 and 2022 YTD Corporate Highlights:

Commercial Launch of OLINVYK® (oliceridine) injection

- **Launched OLINVYK and further strengthened commercial efforts with a focus on core target markets.** Trevena launched OLINVYK in February 2021 and, in the last year, the field and medical teams have met with over 700 target accounts and held over 200 in-service educational programs, where Trevena presented OLINVYK's in-depth clinical, health economic and overall value proposition data to key hospital staff and formulary decision-makers. The team focused on anesthesiologists, colorectal surgeons and critical care physicians who are managing complex patients.

- **Appointed Patricia Drake as Chief Commercial Officer.** In November 2021, the Company welcomed Ms. Drake, a global leader with more than 30 years of experience successfully launching multiple products in the hospital market. Ms. Drake held numerous US and international commercial roles in marketing, sales, and strategy. At Merck, she served as Managing Director and CEO of Merck, Sharp & Dohme (MSD) Finland; Leader of US and global Market Operations and Strategy Realization; and Hospital Business Unit Leader in Canada where she led the successful launch of multiple commercial products, including Bridion®, a highly successful post-surgical product with over \$1 billion worldwide sales in 2020.

- **Leveraged expected OLINVYK approval and commercialization in China to raise up to \$40 million in royalty and revenue interest financing.** The Company today announced a financing with R-Bridge Healthcare Fund focused on OLINVYK royalties expected from Trevena's partner in China, Jiangsu Nhwa Pharmaceutical. Trevena will receive \$15 million upfront, \$15 million upon first commercial sale of OLINVYK in China and an additional \$10 million based on a financing or commercial milestone. If approved by year-end 2023, repayment will be limited to Chinese royalties from Nhwa, plus a 4% royalty (capped at \$10 million) on OLINVYK US net sales. Trevena retains all milestones from its partnership with Nhwa, including a potential \$3 million milestone on Chinese approval.

Compelling Clinical Support for OLINVYK

- **Generated positive topline data from OLINVYK Respiratory Physiology study.** Today, the Company announced positive topline data from a study evaluating the physiologic impact of OLINVYK on respiratory function in high-risk subjects including elderly and obese subjects (mean age of 71.2 years). In this study OLINVYK, at similar levels of analgesia compared to IV morphine, demonstrated a statistically significant reduced impact on respiratory depression. The study was initiated in July 2021 and led by a recognized expert in risk/benefit analysis, Albert Dahan, M.D., Ph.D., Professor of Anesthesiology at the Leiden University Medical Center. The data from this study is consistent with prior data involving younger (mean age of 26.9 years) subjects showing a favorable risk/benefit profile for OLINVYK compared to IV morphine. As with all opioids, serious, life-threatening, or fatal respiratory depression may occur in patients treated with OLINVYK.
- **Advanced two additional post-approval clinical studies focused on respiratory and gastrointestinal (GI) safety outcomes and a potential reduced effect on cognitive function.** In May 2021, the Company announced initiation of a study with Cleveland Clinic to further evaluate the potential impact of OLINVYK on respiratory, GI, and cognitive function outcomes in the postoperative setting. Wake Forest Baptist Health joined the study in August 2021, and topline data is expected in 2H 2022.

In November 2021, the Company also announced a new study designed to assess the potential reduced effect of OLINVYK on cognitive function compared to IV morphine, being conducted in collaboration with the Netherlands-based Center for Human Drug Research. Cognitive function will be assessed using NeuroCart, a validated neurocognitive test methodology, and will also include pain model testing. Topline data from this study is expected by mid-2022.

- **Presented robust health economic models and analyses.** In 2021, the Company published and presented data supporting substantial overall cost savings for hospitals when using OLINVYK compared to IV morphine in postoperative care. These head-to-head data versus IV morphine and the accompanying health economic models can provide valuable information for decision-making by hospital formulary committees. These health economic analyses support our belief that using OLINVYK versus IV morphine may provide substantial economic value to a hospital.
- **Supported clinical and regulatory progress by Jiangsu Nhwa, Trevena’s commercial partner in China.** In July 2021, the Company announced that Jiangsu Nhwa had enrolled its first patient in a bridging Phase 3 clinical trial for OLINVYK in China. Based on supportive data from this study, Jiangsu Nhwa submitted a New Drug Application for OLINVYK to China’s National Medical Products Administration (NMPA) in January 2022.

Broad Pipeline Advancement

- **Established proof-of-concept data for TRV027 in COVID-19 patients.** In September 2021, the Company announced positive data from 30 patients enrolled in a proof-of-concept study in collaboration with Imperial College London (ICL) to investigate TRV027, a novel AT₁ receptor selective agonist, as a potential treatment for acute lung damage / abnormal clotting associated with COVID-19. Among TRV027 treated patients, 70% (7 of 10) experienced a reduction in circulating D-dimer, compared to 27% (3 of 11) of patients on placebo. TRV027 was associated with a 92% probability of a potential beneficial treatment effect, based on a Bayesian model analysis recommended by the study’s Data Monitoring and Safety Committee (DMSC). Elevation of D-dimer is a validated marker of disease morbidity and mortality in patients with COVID-19 infection. These results provide initial evidence of the therapeutic potential of TRV027 to improve COVID-19 patient outcomes.
- **Initiated enrollment in a large NIH ACTIV-4 trial for TRV027 in COVID-19 patients.** In July 2021, the Company announced the first patient enrolled in the NIH-funded ACTIV-4 host tissue trial of TRV027 for COVID-19 and currently anticipate topline data in 2H 2022. The study is a multi-site, randomized, placebo-controlled, clinical trial with approximately 300 COVID-19 patients dosed with TRV027. The Company announces participation in the international expansion of the ACTIV-4 study and will continue to supply TRV027 in collaboration with the NIH Team.
- **Advanced TRV045 into clinical development for diabetic neuropathic pain.** In December 2021, the Company announced advancement of TRV045 into clinical development, following receipt of a notification from the US Food and Drug Administration that the study may proceed. TRV045 is the Company’s novel S1P₁ receptor modulator being developed as a potential treatment for diabetic neuropathic pain. In addition, through a collaboration with the NIH, the Company is also exploring TRV045 as a potential treatment for epilepsy.

Financial Results for Fourth Quarter and Full Year 2021

The Company today reported \$66.9 million in cash and cash equivalents as of December 31, 2021, which it believes will be sufficient to fund operating expenses and capital expenditure requirements through the fourth quarter of 2022. This cash balance does not include proceeds from the R Bridge Financing, announced today. For the fourth quarter of 2021, the Company reported a net loss attributable to common stockholders of \$14.7 million, or \$0.09 per share, compared to \$11.9 million, or \$0.08 per share, for the fourth quarter of 2020. For the full year ended December 31, 2021, net loss attributable to common stockholders was \$52.3 million, or \$0.32 per share, compared to \$29.4 million, or \$0.23 per share, for the year ended December 31, 2020. This increase is primarily due to activities around the commercial launch of OLINVYK.

Conference Call and Webcast Information

The Company will host a conference call and webcast with the investment community on March 31st, 2022, at 8:00 a.m. Eastern Time featuring remarks by Carrie Bourdow, President and Chief Executive Officer, Patricia Drake, Chief Commercial Officer, Mark Demitrack, M.D., Senior Vice President and Chief Medical Officer, and Barry Shin, Senior Vice President and Chief Financial Officer.

Title:	Trevena Fourth Quarter & Full Year 2021 Financial Results Conference Call and Webcast
Date:	Thursday, March 31, 2022
Time:	8:00 a.m. ET
Conference Call Details:	Toll-Free: (855) 465-0180 International: (484) 756-4313 Conference ID: 8874745
Webcast:	https://www.trevena.com/investors/events-presentations/ir-calendar

About OLINVYK® (oliceridine) injection

OLINVYK is a new chemical entity approved by the FDA in August 2020. OLINVYK contains oliceridine, an opioid, which is a Schedule II controlled substance with a high potential for abuse similar to other opioids. It is indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate. OLINVYK is available in 1 mg/1 mL and 2 mg/2 mL single-dose vials, and a 30 mg/30 mL single-patient-use vial for patient-controlled analgesia (PCA). Approved PCA doses are 0.35 mg and 0.5 mg and doses greater than 3 mg should not be administered. The cumulative daily dose should not exceed 27 mg. Please see Important Safety Information, including the BOXED WARNING, and full prescribing information at www.OLINVYK.com.

Important Safety Information

WARNING: ADDICTION, ABUSE, AND MISUSE; LIFE-THREATENING RESPIRATORY DEPRESSION; NEONATAL OPIOID WITHDRAWAL SYNDROME; and RISKS FROM CONCOMITANT USE WITH BENZODIAZEPINES OR OTHER CENTRAL NERVOUS SYSTEM (CNS) DEPRESSANTS

ADDICTION, ABUSE, AND MISUSE – OLINVYK exposes patients and other users to the risks of opioid addiction, abuse, and misuse, which can lead to overdose and death. Assess each patient’s risk before prescribing OLINVYK, and monitor all patients regularly for the development of behaviors or conditions.

LIFE-THREATENING RESPIRATORY DEPRESSION – Serious, life-threatening, or fatal respiratory depression may occur with use of OLINVYK. Monitor for respiratory depression, especially during initiation of OLINVYK or following a dose increase.

NEONATAL OPIOID WITHDRAWAL SYNDROME – Prolonged use of OLINVYK during pregnancy can result in neonatal opioid withdrawal syndrome, which may be life-threatening if not recognized and treated, and requires management according to protocols developed by neonatology experts. If opioid use is required for a prolonged period in a pregnant woman, advise the patient of the risk of neonatal opioid withdrawal syndrome and ensure that appropriate treatment will be available.

RISK FROM CONCOMITANT USE WITH BENZODIAZEPINES OR OTHER CNS DEPRESSANTS – Concomitant use of opioids with benzodiazepines or other CNS depressants, including alcohol, may result in profound sedation, respiratory depression, coma, and death. Reserve concomitant prescribing for use in patients for whom alternative treatment options are inadequate; limit dosages and durations to the minimum required; and follow patients for signs and symptoms of respiratory depression and sedation.

INDICATIONS AND USAGE

OLINVYK is an opioid agonist indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate.

Limitations of Use

Because of the risks of addiction, abuse, and misuse with opioids, even at recommended doses, reserve OLVYK for use in patients for whom alternative treatment options [e.g., non-opioid analgesics or opioid combination products]:

- Have not been tolerated, or are not expected to be tolerated
- Have not provided adequate analgesia, or are not expected to provide adequate analgesia.

The cumulative total daily dose should not exceed 27 mg, as total daily doses greater than 27 mg may increase the risk for QTc interval prolongation.

CONTRAINDICATIONS

OLINVYK is contraindicated in patients with:

- Significant respiratory depression
- Acute or severe bronchial asthma in an unmonitored setting or in the absence of resuscitative equipment
- Known or suspected gastrointestinal obstruction, including paralytic ileus
- Known hypersensitivity to oliceridine (e.g., anaphylaxis)

WARNINGS AND PRECAUTIONS

- OLVYK contains oliceridine, a Schedule II controlled substance, that exposes users to the risks of addiction, abuse, and misuse. Although the risk of addiction in any individual is unknown, it can occur in patients appropriately prescribed OLVYK. Assess risk, counsel, and monitor all patients receiving opioids.
- Serious, life-threatening respiratory depression has been reported with the use of opioids, even when used as recommended, especially in patients with chronic pulmonary disease, or in elderly, cachectic and debilitated patients. The risk is greatest during initiation of OLVYK therapy, following a dose increase, or when used with other drugs that depress respiration. Proper dosing of OLVYK is essential, especially when converting patients from another opioid product to avoid overdose. Management of respiratory depression may include close observation, supportive measures, and use of opioid antagonists, depending on the patient's clinical status.

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- Opioids can cause sleep-related breathing disorders including central sleep apnea (CSA) and sleep-related hypoxemia with risk increasing in a dose-dependent fashion. In patients who present with CSA, consider decreasing the dose of opioid using best practices for opioid taper.
 - Prolonged use of opioids during pregnancy can result in withdrawal in the neonate that may be life-threatening. Observe newborns for signs of neonatal opioid withdrawal syndrome and manage accordingly. Advise pregnant women using OLVYK for a prolonged period of the risk of neonatal opioid withdrawal syndrome and ensure that appropriate treatment will be available.
 - Profound sedation, respiratory depression, coma, and death may result from the concomitant use of OLVYK with benzodiazepines or other CNS depressants (e.g., non-benzodiazepine sedatives/hypnotics, anxiolytics, tranquilizers, muscle relaxants, general anesthetics, antipsychotics, other opioids, or alcohol). Because of these risks, reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are inadequate, prescribe the lowest effective dose, and minimize the duration.
 - OLVYK was shown to have mild QTc interval prolongation in thorough QT studies where patients were dosed up to 27 mg. Total cumulative daily doses exceeding 27 mg per day were not studied and may increase the risk for QTc interval prolongation. Therefore, the cumulative total daily dose of OLVYK should not exceed 27 mg.
 - Increased plasma concentrations of OLVYK may occur in patients with decreased Cytochrome P450 (CYP) 2D6 function or normal metabolizers taking moderate or strong CYP2D6 inhibitors; also in patients taking a moderate or strong CYP3A4 inhibitor, in patients with decreased CYP2D6 function who are also receiving a moderate or strong CYP3A4 inhibitor, or with discontinuation of a CYP3A4 inducer. These patients may require less frequent dosing and should be closely monitored for respiratory depression and sedation at frequent intervals. Concomitant use of OLVYK with CYP3A4 inducers or discontinuation of a moderate or strong CYP3A4 inhibitor can lower the expected concentration, which may decrease efficacy, and may require supplemental doses.
 - Cases of adrenal insufficiency have been reported with opioid use (usually greater than one month). Presentation and symptoms may be nonspecific and include nausea, vomiting, anorexia, fatigue, weakness, dizziness, and low blood pressure. If confirmed, treat with physiologic replacement doses of corticosteroids and wean patient from the opioid.
 - OLVYK may cause severe hypotension, including orthostatic hypotension and syncope in ambulatory patients. There is increased risk in patients whose ability to maintain blood pressure has already been compromised by a reduced blood volume or concurrent administration of certain CNS depressant drugs (e.g., phenothiazines or general anesthetics). Monitor these patients for signs of hypotension. In patients with circulatory shock, avoid the use of OLVYK as it may cause vasodilation that can further reduce cardiac output and blood pressure.
 - Avoid the use of OLVYK in patients with impaired consciousness or coma. OLVYK should be used with caution in patients who may be susceptible to the intracranial effects of CO₂ retention, such as those with evidence of increased intracranial pressure or brain tumors, as a reduction in respiratory drive and the resultant CO₂ retention can further increase intracranial pressure. Monitor such patients for signs of sedation and respiratory depression, particularly when initiating therapy.
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- As with all opioids, OLINVYK may cause spasm of the sphincter of Oddi, and may cause increases in serum amylase. Monitor patients with biliary tract disease, including acute pancreatitis, for worsening symptoms.
- OLINVYK may increase the frequency of seizures in patients with seizure disorders and may increase the risk of seizures in vulnerable patients. Monitor patients with a history of seizure disorders for worsened seizure control.
- Do not abruptly discontinue OLINVYK in a patient physically dependent on opioids. Gradually taper the dosage to avoid a withdrawal syndrome and return of pain. Avoid the use of mixed agonist/antagonist (e.g., pentazocine, nalbuphine, and butorphanol) or partial agonist (e.g., buprenorphine) analgesics in patients who are receiving OLINVYK, as they may reduce the analgesic effect and/or precipitate withdrawal symptoms.
- OLINVYK may impair the mental or physical abilities needed to perform potentially hazardous activities such as driving a car or operating machinery.
- Although self-administration of opioids by patient-controlled analgesia (PCA) may allow each patient to individually titrate to an acceptable level of analgesia, PCA administration has resulted in adverse outcomes and episodes of respiratory depression. Health care providers and family members monitoring patients receiving PCA analgesia should be instructed in the need for appropriate monitoring for excessive sedation, respiratory depression, or other adverse effects of opioid medications.

ADVERSE REACTIONS

Adverse reactions are described in greater detail in the Prescribing Information.

The most common (incidence $\geq 10\%$) adverse reactions in Phase 3 controlled clinical trials were nausea, vomiting, dizziness, headache, constipation, pruritus, and hypoxia.

MEDICAL INFORMATION

For medical inquiries or to report an adverse event, other safety-related information or product complaints for a company product, please contact the Trevena Medical Information Contact Center at [1-844-465-4686](tel:1-844-465-4686) or email MedInfo@Trevena.com.

You are encouraged to report suspected adverse events of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call [1-800-FDA-1088](tel:1-800-FDA-1088).

Please see Full Prescribing Information, including Boxed Warning.

About Trevena

Trevena, Inc. is a biopharmaceutical company focused on the development and commercialization of innovative medicines for patients with CNS disorders. The Company has one approved product in the United States, OLINVYK[®] (oliceridine) injection, indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate. The Company's novel pipeline is based on Nobel Prize winning research and includes four differentiated investigational drug candidates: TRV250 for the acute treatment of migraine, TRV734 for maintenance treatment of opioid use disorder, TRV045 for diabetic neuropathic pain and epilepsy, and TRV027 for acute respiratory distress syndrome and abnormal blood clotting in COVID-19 patients.

For more information, please visit www.Trevena.com

About R-Bridge (CBC Group)

CBC Group is Asia's largest and most active healthcare-dedicated investment firm with over US\$5 billion AUM, focused on platform-building, buyout opportunities, and alternative financing across three core areas: pharmaceutical & biotech, medtech, and healthcare services. CBC has a leading team of investment, industry and portfolio management professionals, headquartered in Singapore with offices in New York, Shanghai, Beijing, and Hong Kong and presence in Boston, San Diego, San Francisco and Tokyo.

Founded in February 2020, R-Bridge Healthcare Fund is an affiliate of CBC Group and it is dedicated in providing alternative, non-dilutive financing backed by royalties, revenue interest and other cash flows generated by the sale of healthcare products and services in China, the first of its kind for the asset class and the region. R-Bridge provides additional sources of capital to leading healthcare companies to continue their extraordinary growth trajectories, commercializing their products and services in China and on a global scale.

About Jiangsu Nhwa Pharmaceuticals

Jiangsu Nhwa Pharmaceutical Co., Ltd. (SZ002262), founded in 1978, is a leading CNS company in China. Over the past 40 years, Nhwa has focused on developing an innovative and differentiated pipeline in the areas of anesthesia, analgesia, psychiatry, and neurology via its own in-house R&D and via global partnerships.

As a fully integrated pharmaceutical company with more than 4000 employees, Nhwa has comprehensive capabilities in discovery, clinical development, manufacturing, and commercialization of CNS drugs. In recent years, Nhwa has further strengthened its leadership in CNS field in China by providing precision diagnostic services for CNS disorders, as well as establishing the largest Chinese CNS internet health platform.

Forward-Looking Statements

Any statements in this press release about future expectations, plans and prospects for the Company, including statements about the Company's strategy, future operations, clinical development and trials of its therapeutic candidates and approved product, plans for potential future product candidates and other statements containing the words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "suggest," "target," "potential," "will," "would," "could," "should," "continue," and similar expressions, constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including: the status, timing, costs, results and interpretation of the Company's clinical trials or any future trials of any of the Company's investigational drug candidates; the uncertainties inherent in conducting clinical trials; expectations for regulatory interactions, submissions and approvals, including the Company's assessment of discussions with FDA; available funding; uncertainties related to the Company's intellectual property; uncertainties related to the ongoing COVID-19 pandemic, other matters that could affect the availability or commercial potential of the Company's therapeutic candidates and approved product; and other factors discussed in the Risk Factors set forth in the Company's Annual Report on Form 10-K and Quarterly Reports on Form 10-Q filed with the Securities and Exchange Commission (SEC) and in other filings the Company makes with the SEC from time to time. In addition, the forward-looking statements included in this press release represent the Company's views only as of the date hereof. The Company anticipates that subsequent events and developments may cause the Company's views to change. However, while the Company may elect to update these forward-looking statements at some point in the future, it specifically disclaims any obligation to do so, except as may be required by law.

For more information, please contact:

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TREVENA, INC.
Condensed Statements of Operations
 (Unaudited, in thousands except share and per share data)

	Three Months Ended Dec 31,		Year Ended Dec 31,	
	2021	2020	2021	2020
Product revenue	\$ (1)	\$ 69	\$ 498	\$ 69
License revenue	-	-	69	3,000
Total revenue	(1)	69	567	3,069
Operating expenses:				
Cost of goods sold	334	182	954	182
Selling, general and administrative	9,761	8,227	38,112	19,248
Research and development	3,937	3,674	13,426	13,124
Total operating expenses	14,032	12,083	52,492	32,554
Loss from operations	(14,033)	(12,014)	(51,925)	(29,485)
Other income	80	143	337	416
Loss before income tax expense	(13,953)	(11,871)	(51,588)	(29,069)
Foreign income tax expense	-	-	-	(300)
Net loss	\$ (13,953)	\$ (11,871)	\$ (51,588)	\$ (29,369)
Per share information:				
Net loss per share of common stock, basic and diluted	\$ (0.08)	\$ (0.08)	\$ (0.32)	\$ (0.23)
Weighted average shares outstanding, basic and diluted	164,724,051	158,012,954	163,293,296	127,623,859

TREVENA, INC.
Condensed Balance Sheets
 (Unaudited, in thousands)

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	\$ 66,923	\$ 109,403
Accounts receivable, net	-	71
Inventories	2,352	-
Insurance recovery	-	9,000
Prepaid expenses and other current assets	1,448	570
Total current assets	70,723	119,044
Restricted cash	1,311	1,310
Property and equipment, net	1,841	2,253
Right-of-use lease assets	4,706	5,119
Other assets	1,543	13
Total assets	\$ 80,124	\$ 127,739
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable, net	\$ 4,547	\$ 1,693
Accrued expenses and other current liabilities	3,847	5,168
Estimated settlement liability	-	9,000
Current portion of lease liabilities	792	703
Total current liabilities	9,186	16,564
Leases, net of current portion	6,309	7,101
Warrant liability	-	6
Total liabilities	15,495	23,671
Common stock	165	160

Additional paid-in capital	558,566	546,422
Accumulated deficit	<u>(494,102)</u>	<u>(442,514)</u>
Total stockholders' equity	<u>64,629</u>	<u>104,068</u>
Total liabilities and stockholders' equity	<u>\$ 80,124</u>	<u>\$ 127,739</u>



 **Trevena**[®]
INNOVATING FOR PATIENTS

Nasdaq: TRVN | March 2022

Forward-Looking Statements

To the extent that statements contained in this presentation are not descriptions of historical facts regarding Trevena, Inc. (the "Company" or "we"), they are forward-looking statements reflecting management's current beliefs and expectations. Forward-looking statements are subject to known and unknown risks, uncertainties, and other factors that may cause our or our industry's actual results, levels of activity, performance, or achievements to be materially different from those anticipated by such statements. You can identify forward-looking statements by terminology such as "anticipate," "believe," "estimate," "expect," "intend," "may," "might," "plan," "objective," "predict," "project," "suggest," "target," "potential," "will," "would," "could," "should," "continue," "ongoing," or the negative of these terms or similar expressions. Forward-looking statements contained in this presentation include, but are not limited to, (i) statements regarding the timing of anticipated clinical trials for our product candidates; (ii) the timing of receipt of clinical data for our product candidates; (iii) our expectations regarding the potential safety, efficacy, or clinical utility of our product candidates; (iv) the size of patient populations targeted by our product candidates and market adoption of our potential drugs by physicians and patients; (v) the timing or likelihood of regulatory filings and approvals; and (vi) our cash needs.

Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including: the commercialization of any approved drug product, the status, timing, costs, results and interpretation of our clinical trials or any future trials of any of our investigational drug candidates; the uncertainties inherent in conducting clinical trials; expectations for regulatory interactions, submissions and approvals, including our assessment of the discussions with the FDA or other regulatory agencies about any and all of our programs; uncertainties related to the commercialization of OLINVYK; available funding; uncertainties related to our intellectual property; uncertainties related to the ongoing COVID-19 pandemic, other matters that could affect the availability or commercial potential of our therapeutic candidates; and other factors discussed in the Risk Factors set forth in our Annual Report on Form 10-K and Quarterly Reports on Form 10-Q filed with the Securities and Exchange Commission (SEC) and in other filings we make with the SEC from time to time. In addition, the forward-looking statements included in this presentation represent our views only as of the date hereof. We anticipate that subsequent events and developments may cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we specifically disclaim any obligation to do so, except as may be required by law.

Trevena's Experienced Leadership Team






SENIOR MANAGEMENT

Carrie L. Bourdow	President & Chief Executive Officer	 
Mark A. Demitrack, M.D.	SVP, Chief Medical Officer	  
Patricia Drake	SVP, Chief Commercial Officer	 
Barry Shin	SVP, Chief Financial Officer	  
Robert T. Yoder	SVP, Chief Business Officer & Head of Commercial Operations	 

BOARD OF DIRECTORS

Leon O. Moulder, Jr. Chairman	 	Marvin H. Johnson, Jr.	
Carrie L. Bourdow		Jake R. Nunn	
Scott Braunstein, M.D.	  	Anne M. Phillips, M.D.	 
Michael R. Dougherty	 	Barbara Yanni	

Trevena: Innovative CNS Company

 IV OLINVYK: Differentiated profile	NCE approved for the management of acute pain in adults Launch in Q1 2021; additional supportive studies vs. IV morphine with near-term data
 Large market, targeted launch	45M+ US hospital patients; 9M procedures is initial core focus \$1.5B+ market opportunity for core focus
 TRV027 for COVID-19	Novel MOA with potential to treat COVID-19 acute lung injury / abnormal clotting Selected for NIH ACTIV trial; ~300 COVID-19 patients on TRV027
 Novel CNS pipeline	New mechanisms for diabetic neuropathic pain / epilepsy, acute migraine, opioid use disorder NCEs targeting significant unmet needs
 Strong financial position	\$66.9M cash and cash equivalents at year end 2021 Funds operations through Q4 2022

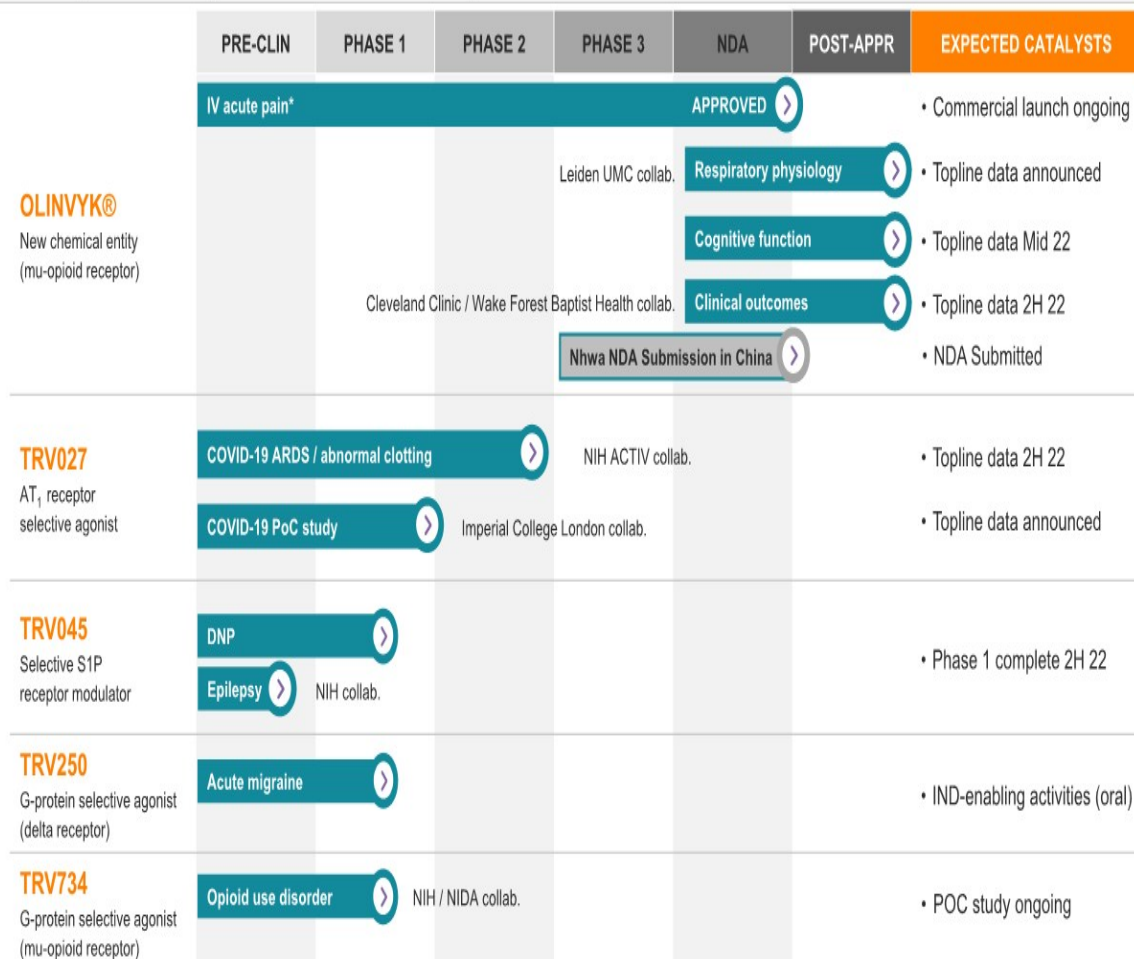
OLINVYK is indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate.

Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com.

NCE = New Chemical Entity; MOA = Mechanism of Action; NIH = National Institutes of Health; ACTIV = Accelerating COVID-19 Therapeutic Interventions and Vaccines;

REMAP-CAP = Randomised, Embedded, Multi-factorial, Adaptive Platform Trial for Community-Acquired Pneumonia

Multiple Expected Catalysts



OLINVYK is indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate.

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TRV250, TRV734, TRV027, and TRV045 are investigational products and are not approved by the FDA or any other regulatory agency.; ARDS = Acute Respiratory Distress Syndrome; ACTIV = Accelerating COVID-19 Therapeutic Interventions and Vaccines; NDA = New Drug Application, PoC = Proof-of-Concept, DNP = Diabetic Neuropathic Pain

Ex-US Royalty-Based Financing Highlights

Blue Chip Investor	<p>R-Bridge Healthcare Fund affiliate of CBC Group (one of the largest and most active healthcare-dedicated investment firms in Asia)</p>
\$40M Total Financing	<p>\$15M upfront \$10M on commercial or financing milestone \$15M on first commercial sale in China \$40M total</p>
Flexible Payments*	<ul style="list-style-type: none"> • Chinese Royalties. All royalties from Nhya partnership, TRVN retains milestones • Capped US Royalty. 4% royalty on US OLINVYK net sales, with \$10M cap**
Constructive Terms	<ul style="list-style-type: none"> • No financial covenants • Negative pledge only until Chinese approval • Flexibility for additional business development opportunities

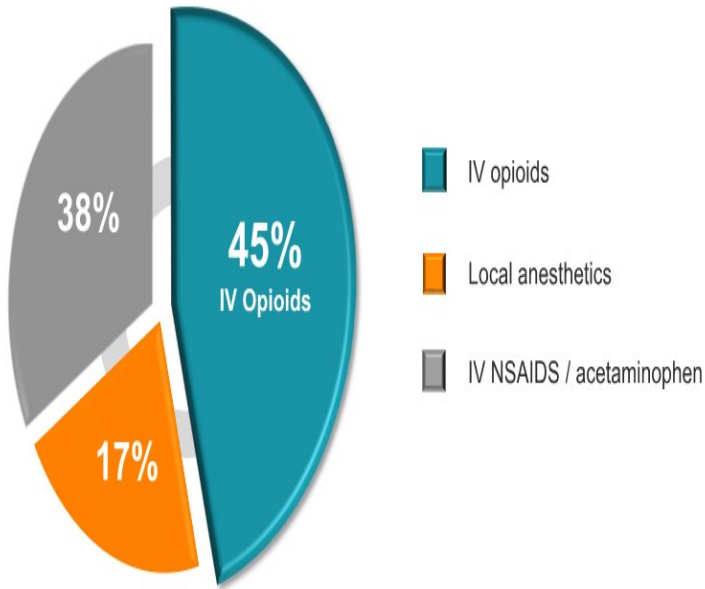


* R-Bridge will receive a 1.5% fee and warrants for 5M shares at a strike price of \$0.82 / sh (75% premium to 30-day VWAP)

**Potential increase to 7% (with combined US/China cap) if not approved by YE-23

Large Market Opportunity – Acute Pain

US injectable analgesic
hospital market unit volume¹



45M patients receive IV opioids
annually to treat acute pain¹

IV opioids have unrivalled
analgesic efficacy

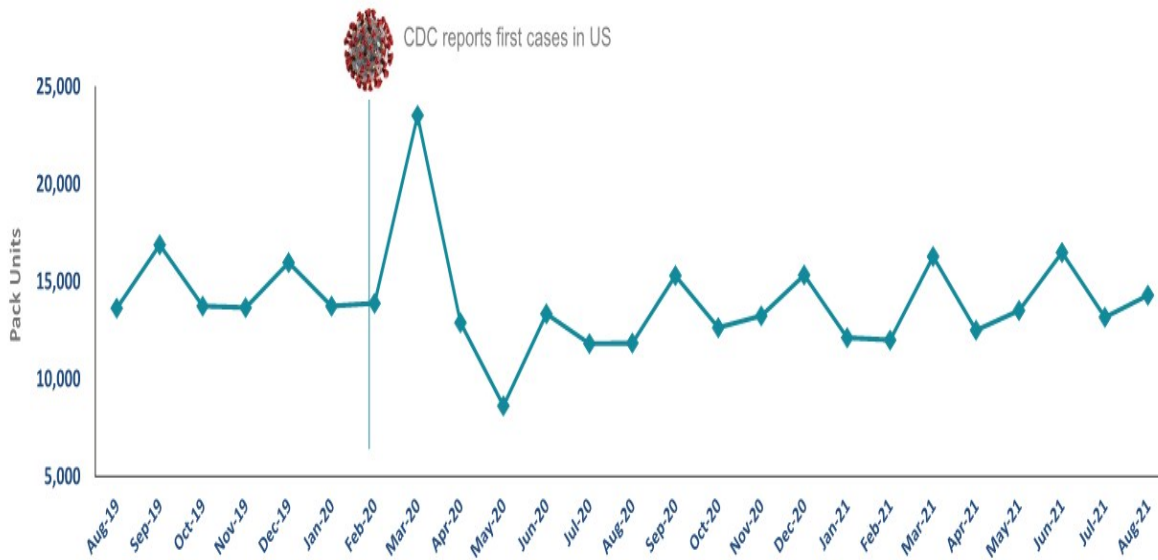
Top surgeries:
Total knee arthroplasty,
colectomy, hernia repair,
spine fusion, C-section²



OLINVYK is indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate. Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com. Opioids are associated with serious, potentially life-threatening adverse reactions. NSAIDs = nonsteroidal anti-inflammatory drugs. 1) IMS MIDAS sales audit 2017; IV NSAIDs and Ofirmev®. 2) Definitive database, and National Vital Statistics report, CDC 2018.

Stable IV Opioid Market Performance

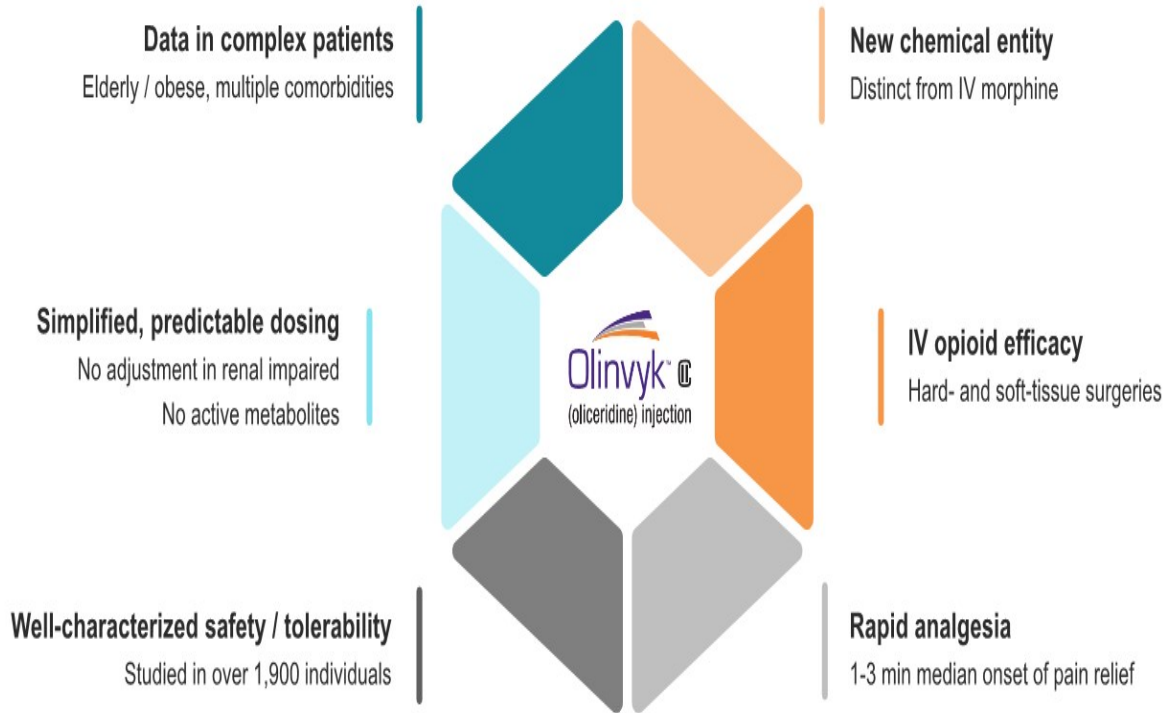
Despite the 20% decline in elective surgeries, IV opioid volume remained stable



Declines due to COVID-19 across top surgical procedures:
Total knee, Total hip, Hernia repair, Hysterectomy, Bariatric

OLINVYK: Differentiated Profile for Acute Pain

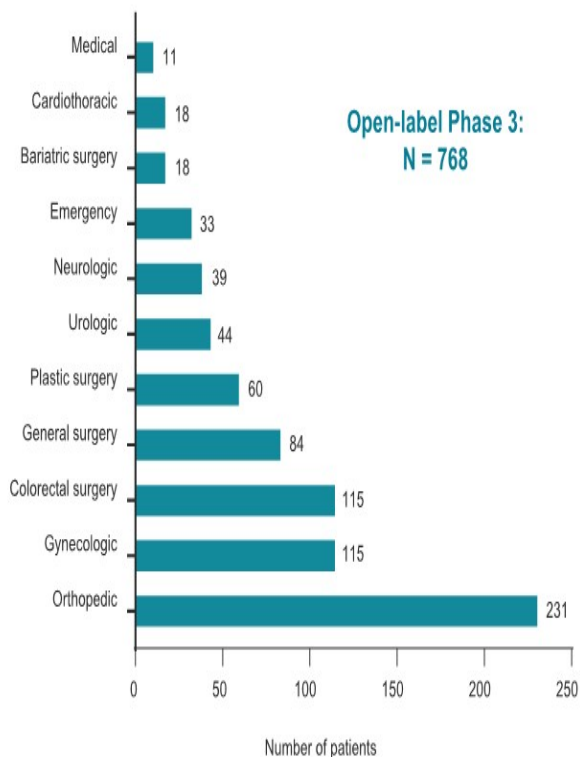
OLINVYK is indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com.

OLINVYK Studied in Complex Surgeries & Patients

Broad range of surgeries / medical procedures



Complex patients included

- 32% \geq 65 years; 46% BMI \geq 30
- Co-morbidities: diabetes, obstructive sleep apnea, COPD, chronic / cancer pain
- Concomitant medications: antiemetics, antibiotics

Multiple inpatient and hosp outpatient settings

- Hospital recovery
- Emergency department
- Critical care
- Ambulatory surgical centers

Low discontinuation for AEs / lack of efficacy

- 2% for adverse events
- 4% for lack of efficacy



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com.
Bergese SD et al. J Pain Research. 2019. Trial modeled real-world use: usual patient care with OLINVYK instead of standard IV opioid.
See FDA draft guidance for Industry Distributing Scientific and Medical Publications on Unapproved New Uses.

OLINVYK: Well-Characterized Safety / Tolerability

Adverse drug reactions reported in ≥5% of OLINVYK-treated patients stratified by daily dose (Phase 3 pivotal trials pooled)¹

	Placebo (N = 162)	OLINVYK ≤ 27 mg (N = 316)	Morphine (N = 158)
Patients with any TEAE (%)	73	86	96
Nausea	35	52	70
Vomiting	10	26	52
Headache	30	26	30
Dizziness	11	18	25
Constipation	9	14	14
Hypoxia	3	12	17
Pruritus	6	9	19
Sedation	5	7	13
Somnolence	4	6	10
Back pain	4	6	6
Hot flush	4	4	8
Pruritus gen.	1	2	10

Not an adequate basis for comparison of rates between the OLINVYK treatment group and the morphine treatment group.

Key cost-drivers associated with IV opioids:

Vomiting

Can result in significant health risks and compromise recovery

Somnolence

Significant patient safety concern, can lead to respiratory depression

O₂ saturation < 90%

Independent predictor of early post-op respiratory complications



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com.
¹) OLINVYK Prescribing Information.

New Respiratory Physiology Study – Topline Data

Effect of OLINVYK vs IV morphine on respiratory physiology in high-risk individuals (elevated age and BMI);
N = 18 subjects

Assessment of Respiratory Function:

- Increase inhaled CO₂ to experimentally induce respiratory drive
- Impact of drug measured as change in minute ventilation
- Greater reductions in minute ventilation indicate more respiratory depression
- Validated method to estimate the impact of a drug on respiratory drive



Ventilatory
Response to
Hypercapnia

Assessment of Pain Threshold:

- Analgesic comparison measured using valid models of induced cold and electrical pain



Analgesia
Assessment

As with all opioids, serious, life-threatening, or fatal respiratory depression may occur in patients treated with OLINVYK.



Please see Important Safety Information including **BOXED WARNING** at the end of presentation. Full Prescribing Information at www.OLINVYK.com.

Respiratory Physiology Study Topline Data Observations

- In elderly, overweight subjects (mean age 71.2 years), at comparable levels of analgesia, oliceridine showed a significantly reduced effect on ventilatory drive over time compared to morphine (P<0.0001)
- These data in elderly subjects replicate results from the initial study in a younger population (mean age 26.9 years), demonstrating a potential for oliceridine to result in a reduced propensity to produce respiratory depression at clinically relevant analgesic doses, compared to IV morphine
- Full results expected 2Q and will be presented at upcoming scientific meetings

As with all opioids, serious, life-threatening, or fatal respiratory depression may occur in patients treated with OLINVYK.

New OLINVYK vs IV Morphine Cognitive Function Study

Clinical assessment of OLINVYK's potential impact on cognitive function vs. IV morphine

- Phase 1 randomized, double-blind, placebo-controlled, crossover study
- N = ~24 subjects, 18-55 years old
- Topline data expected mid-2022

Cognitive function assessment: NeuroCart



- Comprehensive CNS test battery, used in testing a wide range of CNS drugs for 30 years
- Cognitive outcome measures include major domains of motor performance, attention, reaction time, memory, and executive function

Study will also include pain model testing (cold pressor test) and PK assessment

OLINVYK Safety Outcomes Study w/ Cleveland Clinic

Further characterizes potential respiratory, GI and cognitive outcomes

- Open-label, multi-site study led by experts at Cleveland Clinic and Wake Forest Baptist Health
- N = ~200 adults undergoing major non-cardiac surgery
- Topline data expected in 2H 2022



As with all opioids, serious, life-threatening, or fatal respiratory depression may occur in patients treated with OLINVYK.

OLINVYK: Ease of Dosing and Administration

3 vials allow for flexible and tailored IV dosing

- **Bolus Dosing:** 1 mg and 2 mg vials (single dose)
- **PCA Dosing:** 30 mg vial (single patient use)
- **OLINVYK 1 mg \approx morphine 5 mg¹**

27 mg cumulative daily dose limit

Do not administer single doses greater than 3 mg

No refrigeration / reconstitution



1 mg / 1mL



2 mg / 2mL



30 mg / 30 mL

WAC:

\$17.50

\$25.75

\$110.00

~\$100 / day

(estimated avg cost across procedures)

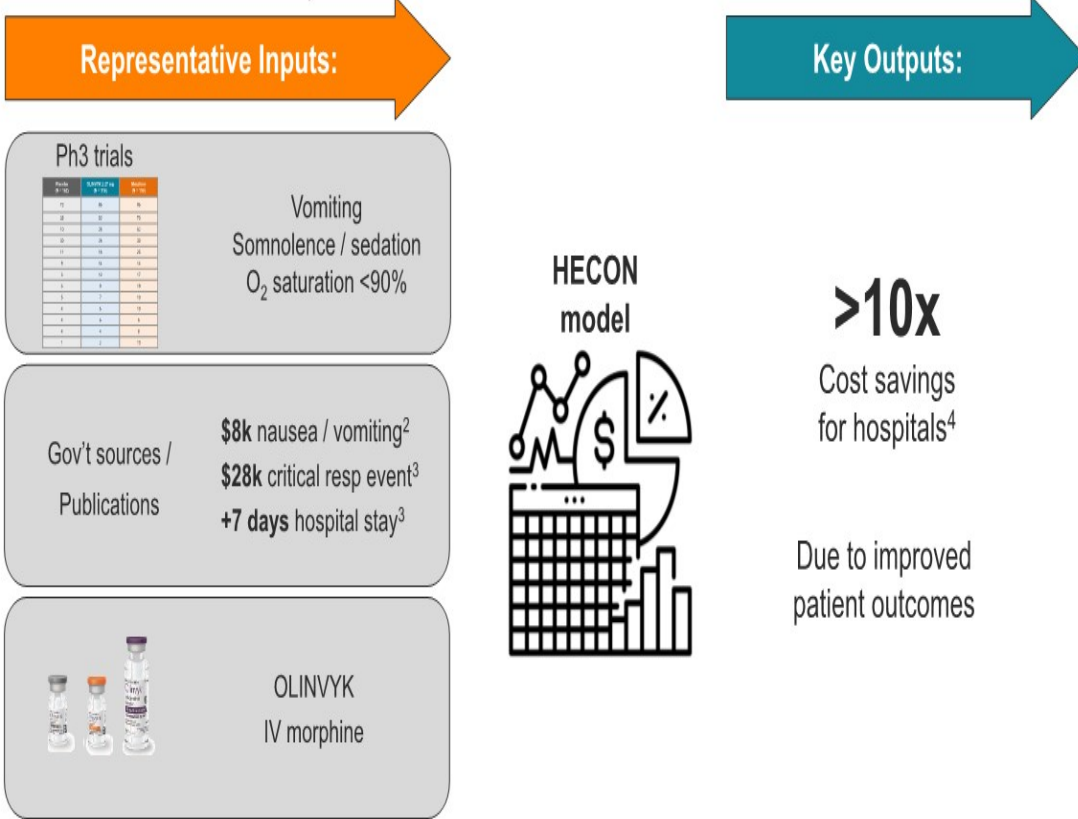


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1) For an initial dose, PCA = Patient-Controlled Analgesia

OLINVYK vs IV Morphine Health Economic Models

Published¹ and available to formulary committees



* As stated in the table, these data are not an adequate basis for comparison of rates between OLINVYK treatment group and the morphine treatment group. The OLINVYK and morphine dosing regimens studied are not considered equipotent.

1) Simpson KN, et al., J Comp Eff Res, 2021; 10:1107-1119 and Simpson KN, et al. Expert Rev Pharmacoecon Outcomes Res; 2022

2) Oderda, GM, J Pain Palliative Care Pharm, 2019; data based on 5 surgical procedure categories including Cardiothoracic / vascular, General / Colorectal, Ob / Gyn, Orthopedic, and Urologic. 3) Overdyk FJ, PLoS One, 2016. More conservative inputs were used in the model. 4) Calculated based on total costs of Tx and average total costs of care. Image: flaticon.com.



Customer Engagement Strategy



Targeted Account Launch

~40 FTEs across Medical, Market Access and Sales deployed in focused segments

Health Care Practitioners (HCPs)

Anesthesiology, Colorectal, Burn physicians

- 1 OLINVYK: NCE, distinct from IV morphine
- 2 1-3 min onset & no active metabolites
- 3 Safety data in complex patients / surgeries

Targeted Accounts

~70% of IV opioid volume covered by customer facing team

- 1 OLINVYK published safety data
- 2 Published health economic / cost offset data

Expanded Targets: ~150 Burn Center Accounts

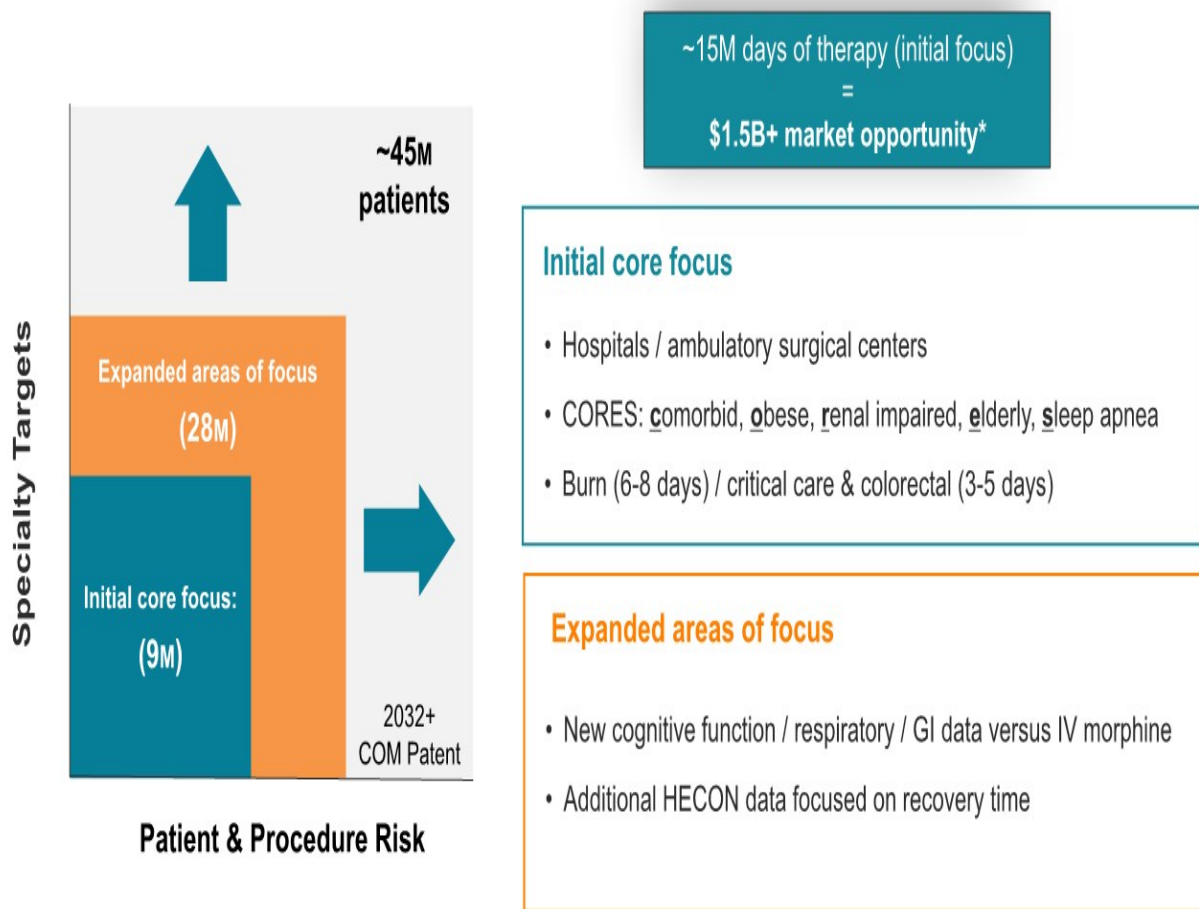
Critical care / burn patients experience severe pain and are at higher risk for AEs

Targeted market opportunity

- ~40k burn-related hospitalizations each year across 150 burn centers in US
- Longer average in-patient stay: 8-9 days
- Burn guidelines recommend use of IV opioids

Key considerations	OLINVYK attributes
Need for rapid, long-lasting acute pain relief	1-3 minute onset of action ~3 hour duration
Many patients have renal injury	No dose adjustment for patients with renal impairment
Need to avoid dose-stacking	No active metabolites
AEs of concern: respiratory depression, vomiting, sedation	Well-characterized safety / tolerability profile

OLINVYK: Significant Opportunity in Acute Pain



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com.
 Source: Definitive Healthcare; American Hospital Association. *Assumes ~\$100 / day price for OLINVYK
 2032 composition of matter patent expiration does not include potential patent extensions.



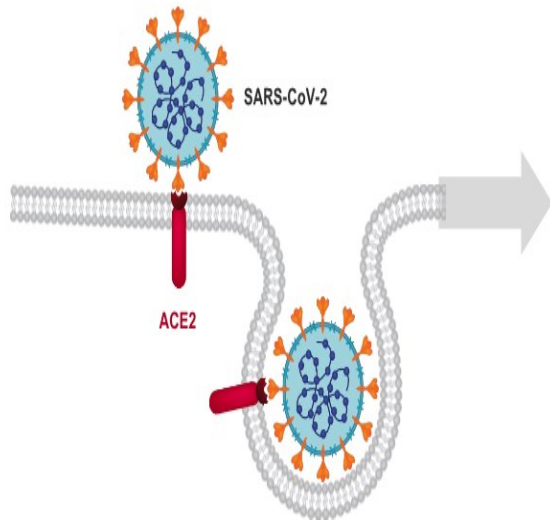
TRV027

NCE targeting the AT1 receptor in COVID-19

Multi-Organ Damage From Coronavirus

Elimination of ACE2 protein leads to critical hormonal imbalances

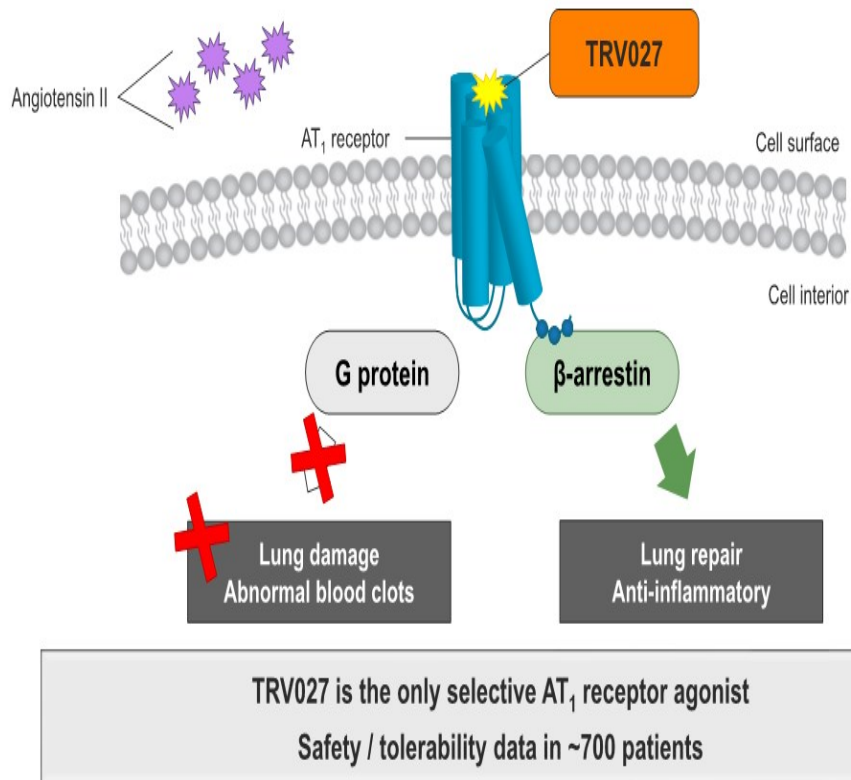
Coronavirus binds to and eliminates ACE2¹



- Leads to accumulation of angiotensin II:
 - Acute lung injury and abnormal blood clots
 - Can lead to ARDS / pulmonary embolism / stroke
- 66% - 94% mortality rate for COVID-19 related ARDS^{2*}
- ~1/3 of hospitalized COVID-19 patients develop clotting complications³

TRV027: New MOA for COVID-19

Mechanism targeted to improve lung function and prevent abnormal clotting



TRV027 COVID-19 Study - Imperial College London

Topline Data announced 3Q '21

- Randomized, double-blind, placebo-controlled proof-of-concept study
- N = 30 COVID-19 patients enrolled
 - Hospitalized, non-ventilated
 - ≥18 years old
 - IV infusion of placebo or TRV027 for 7 days (12 mg/hr)



Imperial College
London

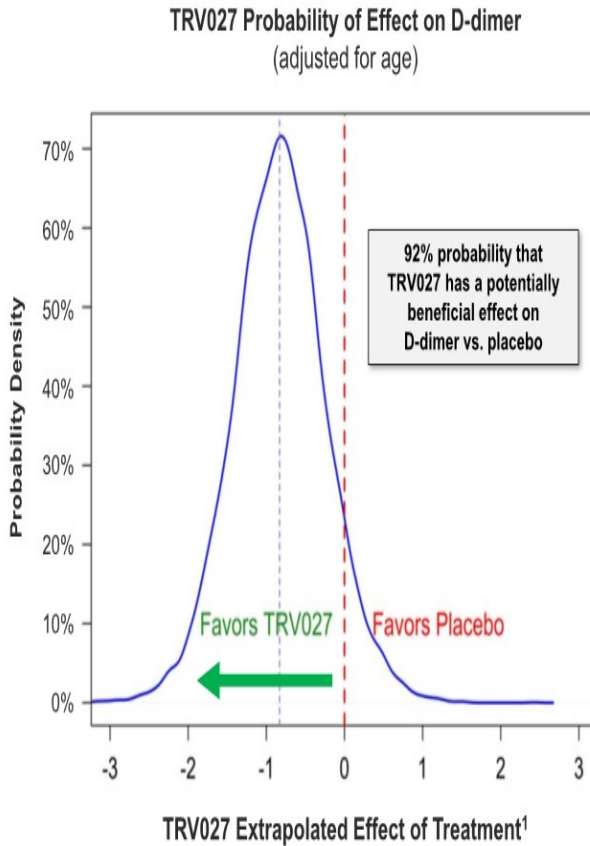
- Primary endpoint: mean change from baseline D-dimer levels at three days

Preliminary data show that TRV027 provided initial evidence of improvement on biomarker and clinical endpoints associated with COVID-19 disease severity and progression



1) Berger J et al. Arterioscler Thromb Vasc Biol. 2020.
DMSC = Data Safety and Monitoring Committee. <https://clinicaltrials.gov/ct2/show/record/NCT04419610>.

Primary Endpoint (D-Dimer Reduction) – Bayesian Results



D-dimer biomarker:
Recognized predictor of disease progression and mortality in COVID-19 infection

Time to Initial Hospital Discharge (Length of Hospital Stay)

Full Analysis Set (excludes deaths)	TRV027 (N=7)*	Placebo (N=10)	Difference
Mean (days)	11.4	23.3	11.9 days
Median	8	12	4 days
Range	5, 32	5, 86	

NOTE: Post-hoc analysis of differences in LOS not dependent upon baseline D-dimer level or SOFA score



A post-hoc analysis indicated that patients receiving TRV027 experienced ~12-day reduction in average length of hospital stay compared to placebo (11.4 vs. 23.3 days), with a median reduction of 4 days (8 vs. 12).
LOS = Length of Stay, SOFA = Sequential Organ Failure Assessment
*1 patient with missing discharge date but alive at Day 30 follow-up.

Preliminary Conclusions

TRV027 was well-tolerated in hospitalized COVID-19 patients

Primary endpoint:

- Bayesian modeling predicted 92% probability for TRV027 having a potentially beneficial impact on D-dimer levels
- TRV027 patients experienced 70% reduction in circulating D-dimer, vs. 27% of placebo patients through 3 days of infusion

Post-hoc analysis:

- TRV027 patients experienced a 12-day reduction in average length of hospital stay compared to placebo¹
- Reduction in time to hospital discharge not dependent on indices of disease severity prior to treatment

These preliminary data show that TRV027 provided initial evidence of improvement on biomarker and clinical endpoints associated with COVID-19 disease severity and progression



1) A post-hoc analysis indicated that patients receiving TRV027 experienced ~12-day reduction in average length of hospital stay compared to placebo (11.4 vs. 23.3 days), with a median reduction of 4 days (8 vs. 12). 28

Multi-Arm Platform Trial with TRV027 in COVID-19 Patients¹

TRV027 data expected in ~300 patients; NIH ACTIV-4 topline data expected 2H 2022

NIH ACTIV-4* (US)



Primary outcome:

Supplemental O₂-free days
(28 days post-randomization)

Additional outcomes: in-hospital mortality,
ventilator-free days, clinical status

- NIH ACTIV-4 is fully funding this study; Trevena is supplying TRV027
- US: Majority of sites are currently open and enrolling patients
- New International Expansion: Enrollment expanded to international sites in the coming months



*ACTIV = Accelerating COVID-19 Therapeutic Interventions and Vaccines.

¹.Patients with ARDS/Abnormal clotting associated with COVID-19

TRV045: Novel MOA for Diabetic Neuropathic Pain

Selective S1PR with no lymphopenia – Expected Completion of Phase 1 2H 2022

S1P₁ receptors are expressed broadly in the CNS

Potential role in the treatment of:

Neuropathic pain

- Inhibits pain sensation¹
- Inhibits excitatory neuronal signaling²



Epilepsy

- Neuroprotective effects³
- Modulates permeability of BBB, anti-inflammatory effects⁴



Selective for S1P-subtype 1 receptor:

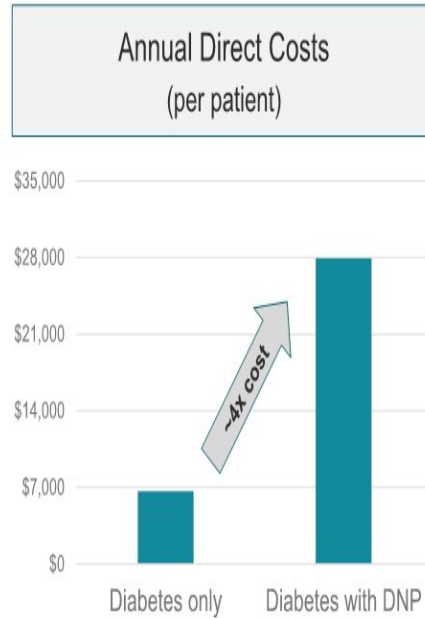
Potential to avoid known safety issues associated with S1P receptor subtypes 2, 3, 4, 5:

Potential pulmonary, cardiac, and cancer-related effects⁵

TRV045 for Diabetic Neuropathic Pain

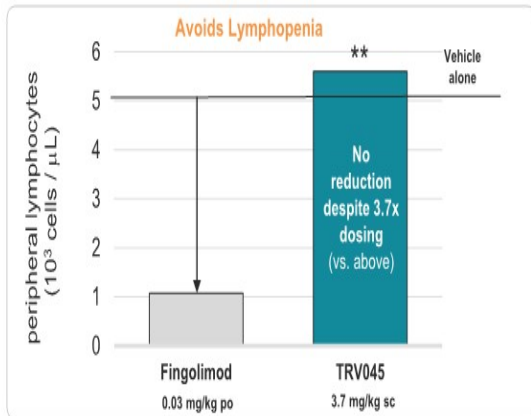
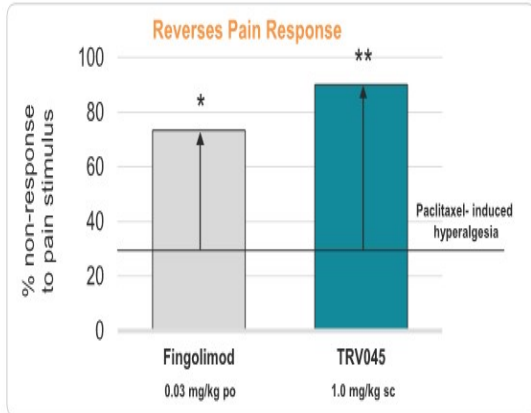
Diabetic neuropathic pain (DNP) represents a large market opportunity

- 30M+ US adults with diabetes (500M+ worldwide)^{1,2}
- DNP affects up to 25% of patients with diabetes^{3,8}
- Significant need for efficacious medicines for DNP⁴⁻⁵
 - Only ~50% of patients experience a clinical response with currently approved therapies
- Direct costs for patients with DNP were ~4x that of patients with only diabetes (no DNP)⁶



TRV045: Novel MOA for Diabetic Neuropathic Pain

5M+ people (US) suffer from DNP, with limited therapeutic options¹



- DNP affects ~25% of people w/ diabetes²
 - Approved agents inadequate for ~50% of patients^{3,4}
 - ~4x direct costs for DNP patients (vs diabetes alone)⁵
- In animals, TRV045 reversed neuropathic pain without immune-suppressing activity⁶
- Non-opioid MOA with broad potential for CNS indications
 - Phase 1 for DNP underway
 - Epilepsy evaluation (NIH) ongoing



1) Rosenberger et al., Journal of Neural Transmission, 2020 and CDC National Diabetes Statistics Report, 2020. 2) Shillo et al., Current Diabetes Reports, 2019. 3) American Diabetes Association. 4) FDA product labels for Lyrica, Lyncra CR, Cymbalta, Nucynta ER, and Qutenza, Tesfaye et al. Pain (2013). 5) Sadosky et al., J Diabetes Complications 2015. 6) CIPN mouse model: Paclitaxel 6 mg/kg, i.p. on Days 1, 3, 5, 7. Hyperalgesia measured as % non-response to 0.4 g Von Frey filament vs. baseline, tested 30' after dosing on Day 13. Lymphocytes measured after 3 days of dosing. Data are mean ± s.e.m. n=5-7 mice/group. *p<0.05 or **p<0.01 vs. control

TRV250: New MOA for Acute Treatment of Migraine

Delta receptor: Untapped potential in CNS space

Migraine represents a large market opportunity; total migraine drug market = ~\$3.5B

Delta receptors have unique distribution throughout the brain

Play important role in regulation of pain, mood, and anxiety

Every year in the US¹:



650M migraines treated each year



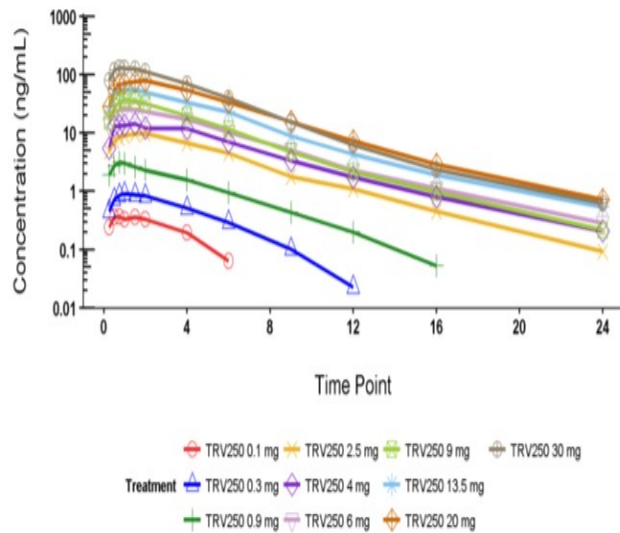
1.2M ER visits due to migraines

- 20-30% of migraine sufferers do not respond to / cannot tolerate the market-leading triptan drug class
- Approx. 50% of migraineurs also suffer from anxiety²

TRV250: Well-Tolerated in Ph1 Healthy Volunteer PK Study

Subcutaneous doses up to 30 mg studied; no SAEs observed

Single dose pharmacokinetics of TRV250 given by SC injection



Well tolerated, with no SAEs across broad range of doses

Predictable PK: dose-proportional between 0.1 mg to 30 mg SC

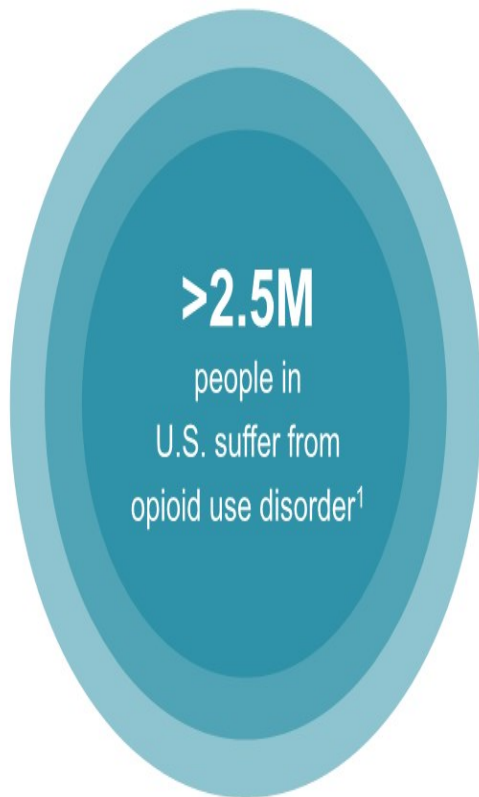
Half-life consistent across all doses

No EEG findings observed in any subject

IND-enabling activities initiated for new oral dose form

TRV734: Maintenance Therapy for Opioid Use Disorder

Selective agonism at μ receptor: nonclinical evidence of improved tolerability



Ongoing collaboration with National Institute on Drug Abuse (NIDA)

NIDA study demonstrated reduced drug-seeking behavior in animal model of relapse²

NIDA-funded proof-of-concept patient study initiated

- Randomized, double-blind, placebo- and positive-controlled study
- N = ~50 opioid-dependent patients undergoing stable methadone maintenance therapy
- **Primary endpoint:** suppression of withdrawal symptoms as measured by the Subjective Opioid Withdrawal Scale
- **Secondary outcomes:** assessments of safety, tolerability, and neurocognitive changes

Multiple Expected Catalysts

	PRE-CLIN	PHASE 1	PHASE 2	PHASE 3	NDA	POST-APPR	EXPECTED CATALYSTS
OLINVYK® New chemical entity (mu-opioid receptor)	IV acute pain*					APPROVED	• Commercial launch ongoing
					Leiden UMC collab.	Respiratory physiology	• Topline data announced
						Cognitive function	• Topline data Mid 22
				Cleveland Clinic / Wake Forest Baptist Health collab.	Clinical outcomes		• Topline data 2H 22
					Nhwa NDA Submission in China		• NDA Submitted
TRV027 AT ₁ receptor selective agonist	COVID-19 ARDS / abnormal clotting				NIH ACTIV collab.		• Topline data 2H 22
	COVID-19 PoC study			Imperial College London collab.			
TRV045 Selective S1P receptor modulator	DNP						• Phase 1 complete 2H 22
	Epilepsy		NIH collab.				
TRV250 G-protein selective agonist (delta receptor)	Acute migraine						• IND-enabling activities (oral)
TRV734 G-protein selective agonist (mu-opioid receptor)	Opioid use disorder				NIH / NIDA collab.		• POC study ongoing



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Appendix



New Respiratory Physiology Study – Topline 1Q '22

Results from Study in Normal Age / BMI Subjects

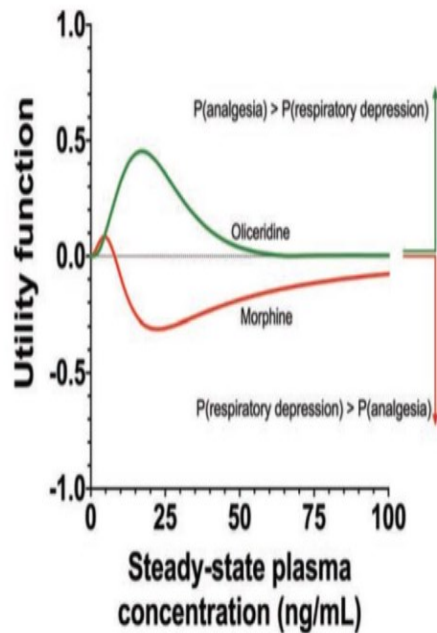


Figure 1: Utility function, the probability of analgesia minus the probability of respiratory depression, $P(\text{analgesia}) - P(\text{respiratory depression})$, of morphine (red) and biased ligand oliceridine (green).

New Study vs IV morphine:

Effect of OLINVYK on respiratory physiology in high-risk individuals (elevated age and BMI)

- Prospective clinical utility respiratory physiology study in high-risk target population (elderly / obese); n=18 subjects
- Comparison of OLINVYK vs. IV morphine: differential impact on respiratory drive

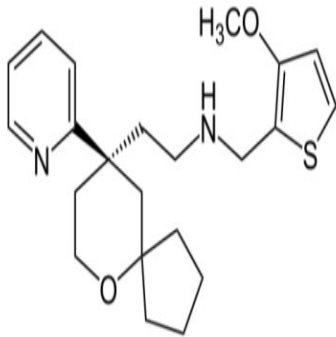
As with all opioids, serious, life-threatening, or fatal respiratory depression may occur in patients treated with OLINVYK.



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com.

OLINVYK: Distinct From IV Morphine / Hydromorphone

OLINVYK



Studied in >1,900 individuals

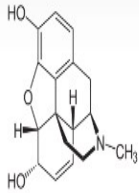


IV morphine included as active comparator

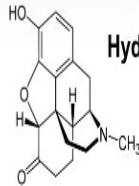


NCE with 2032+ COM patent¹

Morphine



Hydromorphone



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1) 2032 composition of matter patent expiration does not include potential patent extensions.

Robust Clinical Development Program

OLINVYK studied in > 1,900 individuals



No dosage adjustments for elderly / renally impaired

No known active metabolites

4 head-to-head trials vs. IV morphine

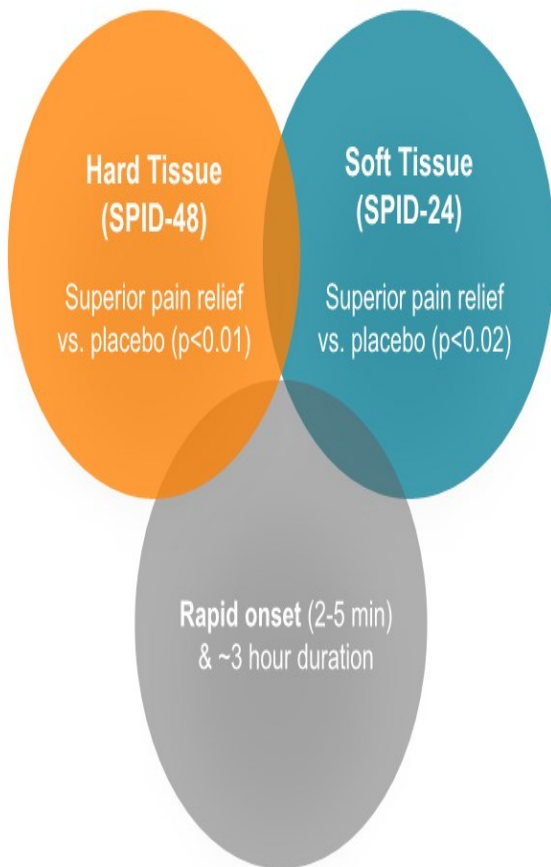
Large safety study:

- Real-world use in complex patients and target surgeries



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subjects exposed to OLINVYK in Ph1 = 318; # patients treated with OLINVYK in Ph2 and Ph3 = 1,535

OLINVYK: IV Opioid Efficacy and Rapid Onset



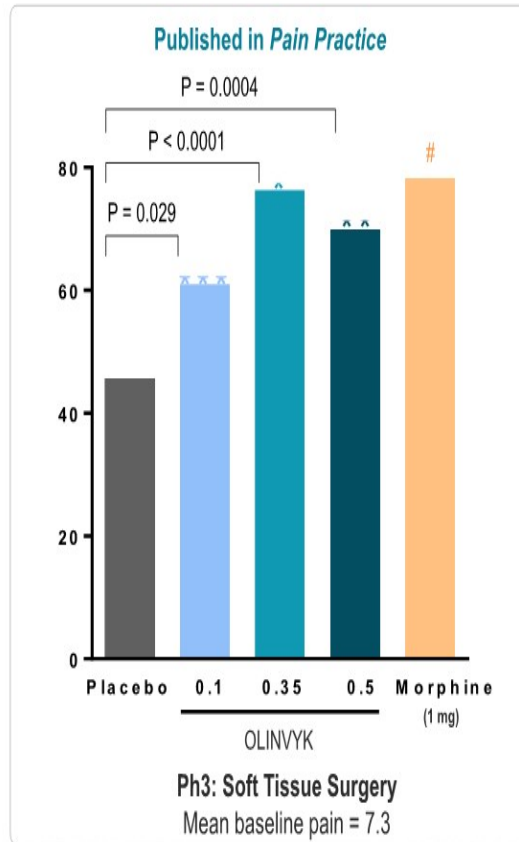
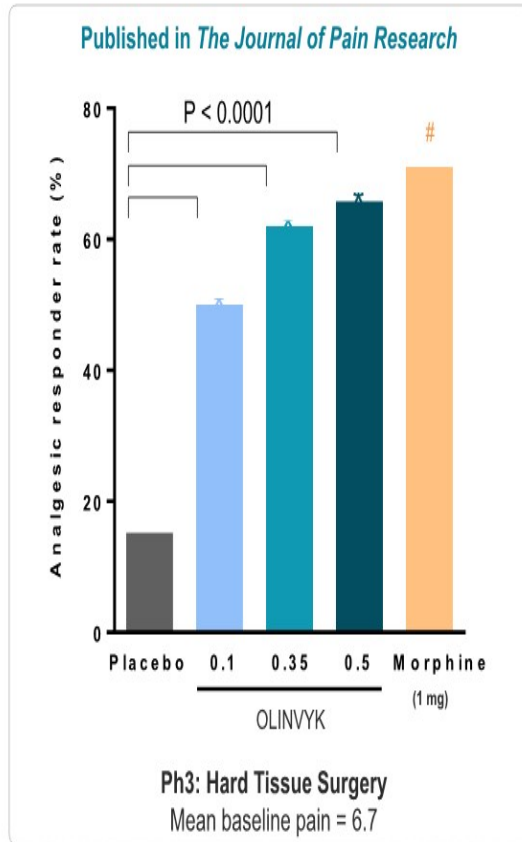
- Efficacy achieved in hard tissue & soft tissue models
- Rapid onset: perceptible pain relief within 1-3 minutes
- OLVYK efficacy data in peer-reviewed journals *The Journal of Pain Research*¹ and *Pain Practice*²



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at www.OLINVYK.com.
1) Viscusi ER et al. *J Pain Res.* 2019;12:927-943. Published 2019 Mar 11. 2) Singla NK et al. *Pain Pract.* 2019;19:715-731. Published 2019 Jun 04.

Primary Efficacy Endpoint Achieved in Two Pivotal Studies

OLINVYK achieved IV opioid efficacy

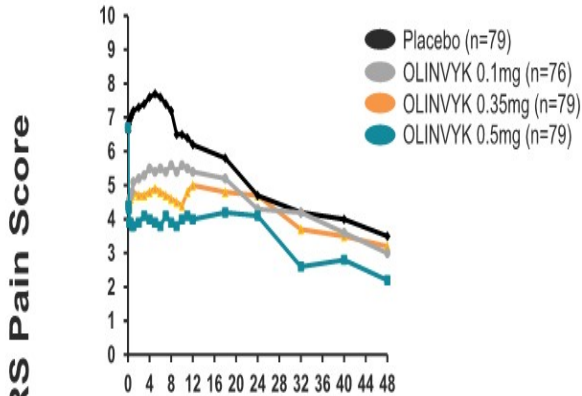


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These analyses were the prespecified primary endpoints for both studies. Section 14 of the Prescribing Information includes the SPID-24 and SPID-48 efficacy analyses that were the basis for approval.
Viscusi ER et al. *J Pain Res.* 2019;12:927-943. Published 2019 Mar 11. Singla NK et al. *Pain Pract.* 2019;19:715-731. Published 2019 Jun 04. #p < 0.05 vs. placebo (unadjusted).

OLINVYK: IV Opioid Efficacy in 2 Phase 3 RCTs

Study 1 (Orthopedic – Hard Tissue)

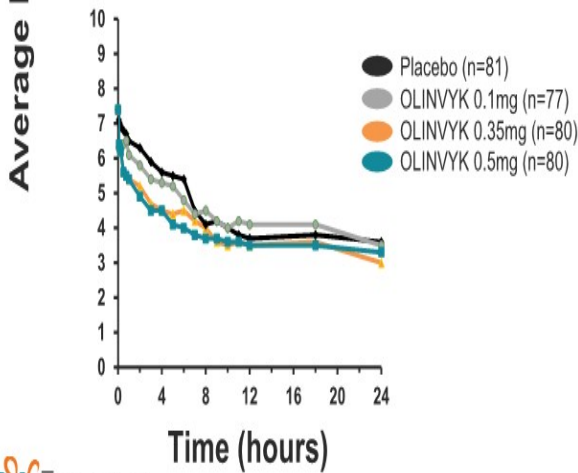
3 PCA regimens studied (0.1, 0.35, 0.5 mg) vs. placebo;
all doses P<0.01 vs. placebo



Outcome	OLINVYK			Placebo
	0.1 mg	0.35 mg	0.5 mg	
% Completed	83%	87%	84%	60%
% D/C LOE	9%	4%	5%	34%
% Rescue Meds	41%	20%	17%	77%

Study 2 (Plastic Surgery – Soft Tissue)

3 PCA regimens studied (0.1, 0.35, 0.5 mg) vs. placebo;
0.35 / 0.5 mg doses P<0.02 vs. placebo



Outcome	OLINVYK			Placebo
	0.1 mg	0.35 mg	0.5 mg	
% Completed	86%	90%	87%	74%
% D/C LOE	11%	3%	5%	22%
% Rescue Meds	31%	21%	18%	49%

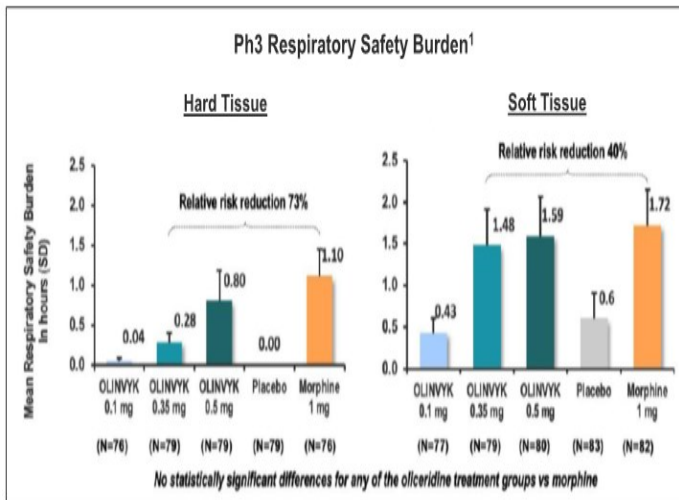


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Robust Assessment of Respiratory Safety in Phase 3 RCTs

Data included in AMCP dossier used in formulary review

- Prespecified secondary endpoint: Respiratory Safety Burden (RSB)
 - Calculated based on incidence and cumulative duration of respiratory safety events
- Full characterization of respiratory safety profile has been made available to HCPs and formulary decision makers
 - Data can be found in OLINVYK AMCP dossier and published literature



Ph3 Respiratory Safety Events² (Components of the RSB calculation)

Hard Tissue

Orthopedic Surgery-Bunionectomy Study	Placebo (N=79)	Demand Dose OLINVYK			Morphine 1 mg (N=76)
		0.1 mg (N=76)	0.35 mg (N=79)	0.5 mg (N=79)	
Components of the respiratory safety burden					
≥1 respiratory safety event, n (%)	0	1 (1.3)	7 (8.9)	11 (13.9)	14 (18.4)
P value vs morphine	0.006	0.002	0.050	0.364	-
Duration of event, mean hours (SD)	0 (N/E)	2.88 (N/E)	3.21 (2.24)	5.72 (7.44)	5.96 (4.87)
P value vs morphine	0.102	0.140	0.280	0.186	-
Respiratory safety event measures					
Oxygen saturation <90%, n (%)	1 (1.3)	3 (3.9)	8 (10.1)	11 (13.9)	15 (19.7)
P value vs morphine	0.005	0.006	0.100	0.352	-
Respiratory rate ≤8 bpm, n (%)	0	0	1 (1.3)	1 (1.3)	4 (5.3)
P value vs morphine	0.956	0.956	0.188	0.185	-
Sedation (MRPSS ≥3), n (%)	10 (2.7)	14 (18.4)	18 (20.3)	13 (16.5)	15 (19.7)
P value vs morphine	0.242	0.838	0.926	0.610	-

Soft Tissue

Plastic Surgery-Abdominoplasty Study	Placebo (N=83)	Demand Dose OLINVYK			Morphine 1 mg (N=82)
		0.1 mg (N=77)	0.35 mg (N=79)	0.5 mg (N=80)	
Components of the respiratory safety burden					
≥1 respiratory safety event, n (%)	5 (6.0)	6 (7.8)	17 (21.5)	18 (22.5)	22 (26.8)
Odds ratio vs morphine	0.15	0.19	0.61	0.68	-
P value vs morphine	0.0003	0.0007	0.20	0.32	-
Duration of event, mean hours (SD)	9.88 (7.0)	5.51 (1.91)	6.88 (5.66)	7.07 (6.56)	6.40 (5.09)
P value vs morphine	0.52	0.29	0.78	0.76	-
Respiratory safety event measures					
Oxygen saturation <90%, n (%)	7 (8.4)	6 (7.8)	15 (19.0)	16 (20.0)	20 (24.4)
P value vs morphine	0.02	0.01	0.57	0.76	-
Respiratory rate ≤8 bpm, n (%)	1 (1.2)	0	4 (5.1)	6 (7.5)	8 (9.8)
P value vs morphine	0.054	0.95	0.38	0.84	-
Sedation (MRPSS ≥3), n (%)	15 (18.1)	8 (10.4)	19 (24.1)	18 (22.5)	21 (25.6)
P value vs morphine	0.25	0.02	0.83	0.65	-

bpm = breaths per minute; MRPSS = Moline-Roberts Pharmacologic Sedation Scale

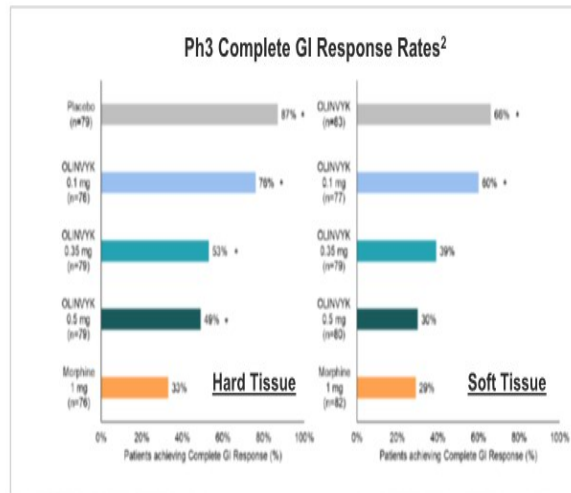
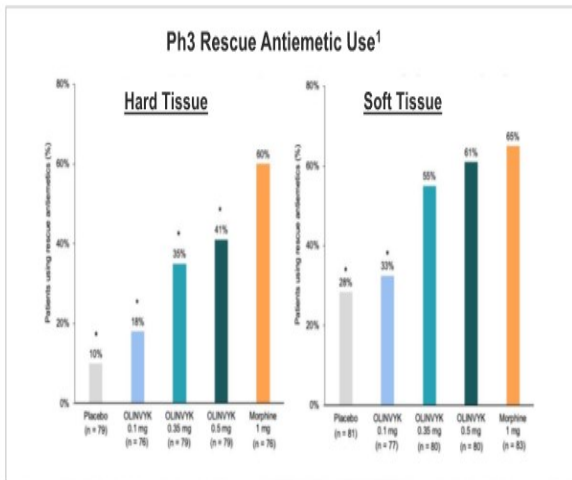
As with all opioids, serious, life-threatening, or fatal respiratory depression may occur in patients treated with OLINVYK.



1) Figure 2-8, Section 2.2, OLINVYK Evidence Dossier for Formulary Consideration. 2) Figures 3-4 and 3-8, Section 3.1, OLINVYK Evidence Dossier for Formulary Consideration.

Robust Assessment of GI Tolerability in Phase 3 RCTs

Data included in AMCP dossier used in formulary review



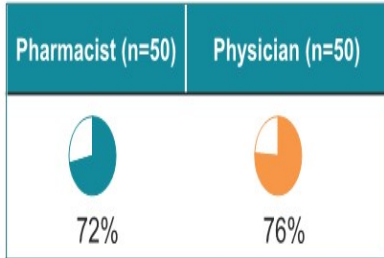
- Phase 3 pivotal trials included measurements of nausea / vomiting rates and rescue antiemetic use
- Additional exploratory post-hoc analysis was conducted using a “complete GI response” endpoint³
- Full characterization of GI tolerability has been made available to HCPs and formulary decision makers
 - Data can be found in OLINVYK AMCP dossier and published literature



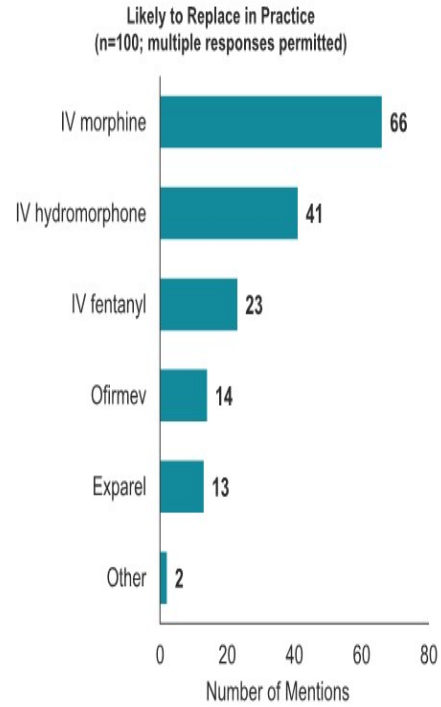
P < 0.05 vs. morphine.1) Figure 2-10, Section 2.2, OLINVYK Evidence Dossier for Formulary Consideration. 2) Figure 2-11, Section 2.2, OLINVYK Evidence Dossier for Formulary Consideration. 3) GI complete response defined as the proportion of patients who did not experience the AE of vomiting and did not use rescue antiemetic medication throughout their allocated treatment period in the study.

Positive Feedback from Formulary Stakeholders¹

~75% of formulary stakeholders find OLINVYK's published data clinically meaningful:²



Majority of stakeholders view IV morphine as likely to be replaced by OLINVYK:



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1) Qualitative Pricing research, Charles River Associates, April 2020. 2) "Are the improvements in respiratory safety events and GI tolerability clinically meaningful?" Based on OLINVYK Ph3 clinical trial data.

Omni-channel Approach for HCP Engagement

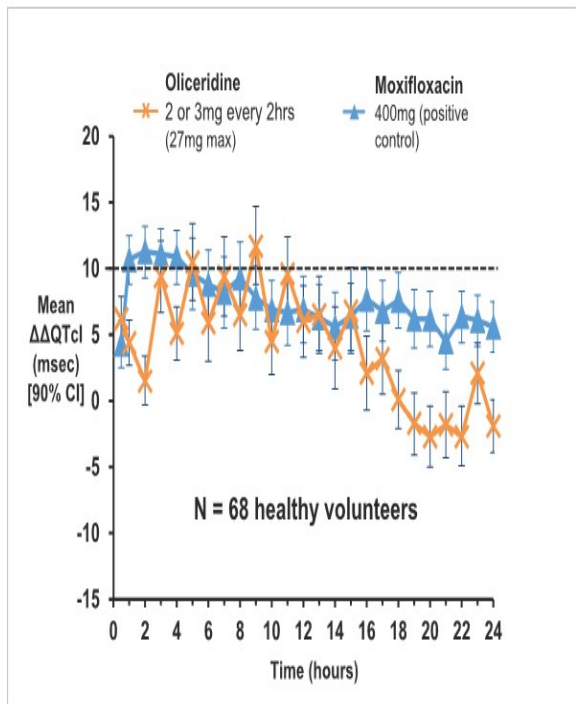
Communication across a full range of channels to maximize reach and impact



- ➔ Field directed: live, virtual & email
- ➔ HCP social media
- ➔ Professional Society Meetings & Congresses
- ➔ Olinvyk.com
- ➔ Virtual “on demand” Medical Education programs

No Accumulation Despite Repeated Dosing

Multi-Dose tQT Study



Key results

- **No accumulation through 24 hrs**
Mean QTcI <10ms at 22 of 24 points
- **No categorical QTc outliers**
 $\Delta >60$ ms; >500 ms absolute
- **Well tolerated, no SAEs***
92% reached max daily dose

*The effect on QT prolongation at total cumulative daily doses >27 mg has not been studied in a thorough QT study. Total cumulative daily doses exceeding 27 mg per day may increase the risk for QTc interval prolongation. Therefore, the cumulative total daily dose of OLINVYK should not exceed 27 mg.



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3 subjects not dosed due to lack of venous access: 1 discontinuation due to a non-serious adverse event (asymptomatic non-sustained ventricular tachycardia) with confounding hypokalemia and no meaningful QT prolongation during dosing, 1 subject completed dosing but not evaluable due to equipment malfunction



IMPORTANT SAFETY INFORMATION



WARNING: ADDICTION, ABUSE, AND MISUSE; LIFE-THREATENING RESPIRATORY DEPRESSION; NEONATAL OPIOID WITHDRAWAL SYNDROME; and RISKS FROM CONCOMITANT USE WITH BENZODIAZEPINES OR OTHER CENTRAL NERVOUS SYSTEM (CNS) DEPRESSANTS

Addiction, Abuse, and Misuse

OLINVYK exposes patients and other users to the risks of opioid addiction, abuse, and misuse, which can lead to overdose and death. Assess each patient's risk before prescribing OLINVYK, and monitor all patients regularly for the development of behaviors or conditions.

Life-Threatening Respiratory Depression

Serious, life-threatening, or fatal respiratory depression may occur with use of OLINVYK. Monitor for respiratory depression, especially during initiation of OLINVYK or following a dose increase.

Neonatal Opioid Withdrawal Syndrome

Prolonged use of OLINVYK during pregnancy can result in neonatal opioid withdrawal syndrome, which may be life-threatening if not recognized and treated, and requires management according to protocols developed by neonatology experts. If opioid use is required for a prolonged period in a pregnant woman, advise the patient of the risk of neonatal opioid withdrawal syndrome and ensure that appropriate treatment will be available.

Risk From Concomitant Use With Benzodiazepines or Other CNS Depressants

Concomitant use of opioids with benzodiazepines or other CNS depressants, including alcohol, may result in profound sedation, respiratory depression, coma, and death. Reserve concomitant prescribing for use in patients for whom alternative treatment options are inadequate; limit dosages and durations to the minimum required; and follow patients for signs and symptoms of respiratory depression and sedation.

INDICATIONS AND USAGE

OLINVYK is a new chemical entity indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate.

Limitations of Use

Because of the risks of addiction, abuse, and misuse with opioids, even at recommended doses, reserve OLINVYK for use in patients for whom alternative treatment options [e.g., non-opioid analgesics or opioid combination products]:

- Have not been tolerated, or are not expected to be tolerated
- Have not provided adequate analgesia, or are not expected to provide adequate analgesia.

The cumulative total daily dose should not exceed 27 mg, as total daily doses greater than 27 mg may increase the risk for QTc interval prolongation.

CONTRAINDICATIONS

OLINVYK is contraindicated in patients with:

- Significant respiratory depression
- Acute or severe bronchial asthma in an unmonitored setting or in the absence of resuscitative equipment
- Known or suspected gastrointestinal obstruction, including paralytic ileus
- Known hypersensitivity to oliceridine (e.g., anaphylaxis)

WARNINGS AND PRECAUTIONS

- OLINVYK contains oliceridine, a Schedule II controlled substance, that exposes users to the risks of addiction, abuse, and misuse. Although the risk of addiction in any individual is unknown, it can occur in patients appropriately prescribed OLINVYK. Assess risk, counsel, and monitor all patients receiving opioids.
- Serious, life-threatening respiratory depression has been reported with the use of opioids, even when used as recommended, especially in patients with chronic pulmonary disease, or in elderly, cachectic and debilitated patients. The risk is greatest during initiation of OLINVYK therapy, following a dose increase, or when used with other drugs that depress respiration. Proper dosing of OLINVYK is essential, especially when converting patients from another opioid product to avoid overdose. Management of respiratory depression may include close observation, supportive measures, and use of opioid antagonists, depending on the patient's clinical status.
- Opioids can cause sleep-related breathing disorders including central sleep apnea (CSA) and sleep-related hypoxemia with risk increasing in a dose-dependent fashion. In patients who present with CSA, consider decreasing the dose of opioid using best practices for opioid taper.



WARNINGS AND PRECAUTIONS

- Prolonged use of opioids during pregnancy can result in withdrawal in the neonate that may be life-threatening. Observe newborns for signs of neonatal opioid withdrawal syndrome and manage accordingly. Advise pregnant women using OLINVYK for a prolonged period of the risk of neonatal opioid withdrawal syndrome and ensure that appropriate treatment will be available.
- Profound sedation, respiratory depression, coma, and death may result from the concomitant use of OLINVYK with benzodiazepines or other CNS depressants (e.g., non-benzodiazepine sedatives/hypnotics, anxiolytics, tranquilizers, muscle relaxants, general anesthetics, antipsychotics, other opioids, or alcohol). Because of these risks, reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are inadequate, prescribe the lowest effective dose, and minimize the duration.
- OLINVYK was shown to have mild QTc interval prolongation in thorough QT studies where patients were dosed up to 27 mg. Total cumulative daily doses exceeding 27 mg per day were not studied and may increase the risk for QTc interval prolongation. Therefore, the cumulative total daily dose of OLINVYK should not exceed 27 mg.
- Increased plasma concentrations of OLINVYK may occur in patients with decreased Cytochrome P450 (CYP) 2D6 function or normal metabolizers taking moderate or strong CYP2D6 inhibitors; also in patients taking a moderate or strong CYP3A4 inhibitor, in patients with decreased CYP2D6 function who are also receiving a moderate or strong CYP3A4 inhibitor, or with discontinuation of a CYP3A4 inducer. These patients may require less frequent dosing and should be closely monitored for respiratory depression and sedation at frequent intervals. Concomitant use of OLINVYK with CYP3A4 inducers or discontinuation of a moderate or strong CYP3A4 inhibitor can lower the expected concentration, which may decrease efficacy, and may require supplemental doses.
- Cases of adrenal insufficiency have been reported with opioid use (usually greater than one month). Presentation and symptoms may be nonspecific and include nausea, vomiting, anorexia, fatigue, weakness, dizziness, and low blood pressure. If confirmed, treat with physiologic replacement doses of corticosteroids and wean patient from the opioid.
- OLINVYK may cause severe hypotension, including orthostatic hypotension and syncope in ambulatory patients.
- There is increased risk in patients whose ability to maintain blood pressure has already been compromised by a reduced blood volume or concurrent administration of certain CNS depressant drugs (e.g., phenothiazines or general anesthetics). Monitor these patients for signs of hypotension. In patients with circulatory shock, avoid the use of OLINVYK as it may cause vasodilation that can further reduce cardiac output and blood pressure.
- Avoid the use of OLINVYK in patients with impaired consciousness or coma. OLINVYK should be used with caution in patients who may be susceptible to the intracranial effects of CO₂ retention, such as those with evidence of increased intracranial pressure or brain tumors, as a reduction in respiratory drive and the resultant CO₂ retention can further increase intracranial pressure. Monitor such patients for signs of sedation and respiratory depression, particularly when initiating therapy.
- As with all opioids, OLINVYK may cause spasm of the sphincter of Oddi, and may cause increases in

serum amylase. Monitor patients with biliary tract disease, including acute pancreatitis, for worsening symptoms.

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- OLINVYK may increase the frequency of seizures in patients with seizure disorders and may increase the risk of seizures in vulnerable patients. Monitor patients with a history of seizure disorders for worsened seizure control.
- Do not abruptly discontinue OLINVYK in a patient physically dependent on opioids. Gradually taper the dosage to avoid a withdrawal syndrome and return of pain. Avoid the use of mixed agonist/antagonist (e.g., pentazocine, nalbuphine, and butorphanol) or partial agonist (e.g., buprenorphine) analgesics in patients who are receiving OLINVYK, as they may reduce the analgesic effect and/or precipitate withdrawal symptoms.
- OLINVYK may impair the mental or physical abilities needed to perform potentially hazardous activities such as driving a car or operating machinery.
- Although self-administration of opioids by patient-controlled analgesia (PCA) may allow each patient to individually titrate to an acceptable level of analgesia, PCA administration has resulted in adverse outcomes and episodes of respiratory depression. Health care providers and family members monitoring patients receiving PCA analgesia should be instructed in the need for appropriate monitoring for excessive sedation, respiratory depression, or other adverse effects of opioid medications.

ADVERSE REACTIONS

Adverse reactions are described in greater detail in the Prescribing Information.

The most common (incidence ≥10%) adverse reactions in Phase 3 controlled clinical trials were nausea, vomiting, dizziness, headache, constipation, pruritus, and hypoxia.

PLEASE see www.OLINVYK.com for full prescribing information including **BOXED** warning and important safety information