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**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): **May 6, 2021**

**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)

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

**n/a**  
(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:

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
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.

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**Item 2.02. Results of Operations and Financial Condition.**

The information under this caption and contained in the press release attached hereto as Exhibit 99.1 is furnished by Trevena, Inc. (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.

On May 6, 2021, the Company issued a press release announcing its financial results for the quarter ended March 31, 2021. A copy of the press release is furnished hereto as Exhibit 99.1 and incorporated herein by reference.

**Item 7.01 Regulation FD Disclosure**

On May 6, 2021, Trevena, Inc. (the “Company”) updated its website to include an updated corporate presentation deck. A copy of the updated corporate 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 Securities Exchange Act of 1934, as amended (the “Exchange Act”), and is not incorporated by reference into any of the Company’s filings under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof, except as shall be expressly set forth by specific reference in any such filing.

**Item 8.01 Other Events.**

On May 6, 2021, the Company issued a press release announcing that TRV027, the Company’s novel AT<sub>1</sub> receptor selective agonist, has been selected for a National Institutes of Health ACTIV (Accelerating COVID-19 Therapeutic Interventions and Vaccines) trial in COVID-19 patients coordinated by Vanderbilt University Medical Center. A copy of the press release is filed as Exhibit 99.3 to this Current Report on Form 8-K and incorporated herein by reference.

**Item 9.01 Financial Statements and Exhibits.**

**(d) Exhibits.**

<b>Exhibit No.</b>	<b>Description</b>
<a href="#">99.1</a>	<a href="#">Press Release dated May 6, 2021</a>
<a href="#">99.2</a>	<a href="#">Corporate Presentation Deck dated May 6, 2021</a>
<a href="#">99.3</a>	<a href="#">Press Release dated May 6, 2021</a>
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: May 6, 2021

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

## Trevena Reports First Quarter 2021 Results

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*Company reaffirms YE target of 100 formulary approvals for OLINVYK®*

*Announces new OLINVYK clinical outcomes study to further examine potential benefit on respiratory, GI, and cognitive function*

*TRV027 selected for two large, multi-site COVID-19 studies led by NIH / Vanderbilt University Medical Center and REMAP-CAP*

*TRV045 IND filing remains on track for 1H 2021 with a lead target indication of diabetic neuropathic pain*

*\$97.7M cash at Q1 funds operations through YE 2022*

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*Company to host conference call today, May 6<sup>th</sup>, 2021, at 8:00 a.m. ET*

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CHESTERBROOK, PA, May 6, 2021 (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 first quarter ended March 31, 2021, and provided an overview of its recent operational highlights.

“In the first quarter, we made significant progress across our business. We continued to expand awareness of OLINVYK with key customers and announced an exciting outcomes study to further enhance the value proposition,” said Carrie Bourdow, President and Chief Executive Officer of Trevena, Inc. “In parallel, we advanced our pipeline with major new studies for TRV027 in COVID-19 patients, in collaboration with two of the most prominent platform trial networks in the world, and we selected diabetic neuropathic pain as the initial indication for TRV045.”

### First Quarter 2021 and Recent Corporate Highlights:

#### OLINVYK (oliceridine) injection Milestones

- **Established a solid foundation for launch.** The Company deployed a virtual field team at the end of February. Over 60 accounts are in various stages of OLINVYK review and 10 accounts have already added OLINVYK to formulary. Despite the impact of COVID-19, the Company is encouraged by the early progress and reaffirms its year-end goal of 100 formulary approvals.
- **Announced clinical outcomes study examining potential respiratory, GI, and cognitive benefits.** Today, the Company announced that it has initiated an open-label, multi-site, differentiation study to further characterize the impact of OLINVYK on respiratory, gastrointestinal (GI), and cognitive function outcomes in the postoperative setting. The study, which will enroll approximately 200 adults undergoing major surgery, will be led by clinical outcomes research experts from Cleveland Clinic. Respiratory safety will be assessed by continuous monitoring. Additional outcomes will include GI tolerability as measured by GI complete response, and cognitive function as measured by standardized somnolence, sedation, and delirium assessment scales. The Company expects patient enrollment to begin in Q3 2021.
- **Published compelling health economic models.** In April 2021, the Company presented two health economic models for OLINVYK at the AMCP 2021 Annual Meeting. Both models demonstrate substantial overall total cost of care savings for hospitals when using OLINVYK compared to IV morphine in postoperative care. They were developed using adverse event (AE) incidence rates from the OLINVYK Phase 3 program and a conservative, low-end estimate of AE costs based on government and published literature sources.

#### Pipeline Milestones

- **Advanced TRV027 in two large COVID-19 trials led by NIH / Vanderbilt University and REMAP-CAP, with TRV027 studied in up to 600 patients.** Today, the Company announced that TRV027, its novel AT<sub>1</sub> receptor selective agonist, has been selected for an NIH-funded, multi-arm, multi-site trial in COVID-19 patients, with Vanderbilt University Medical Center (VUMC) as the lead coordinating site. TRV027 will be administered in up to 300 patients. The trial is part of the NIH's ACTIV public-private partnership, an initiative that seeks to prioritize and expedite the development of promising COVID-19 treatments and vaccines.

In April 2021, the Company announced that TRV027 had been selected for an international, multi-arm, multi-site Phase 2/3 trial in COVID-19 patients. TRV027 will be administered in conjunction with an ACE inhibitor in 200-300 patients. The trial is being conducted and funded as part of REMAP-CAP, a global clinical trial network led by experts in pandemic response and financially supported by an array of governments and research organizations worldwide.

- **Announced diabetic neuropathic pain as lead indication for TRV045, with IND on track for 1H 2021.** The Company today announced it will be filing the IND for TRV045, its novel S1P receptor modulator, with a lead indication of diabetic neuropathic pain (DNP). DNP is a painful condition with significant need for new treatment options, due to poor efficacy and tolerability of current available therapies. TRV045 offers a non-opioid based approach, and its novel pharmacologic class may offer unique advantages in the treatment of DNP and other CNS indications. The NIH, with whom the Company has an ongoing collaboration for this program, is also continuing its evaluation of TRV045 for epilepsy.

#### Financial Results for First Quarter 2021

For the first quarter of 2021, the Company reported a net loss attributable to common stockholders of \$9.8 million, or \$0.06 per share, compared to \$5.7 million, or \$0.06 per share, for the first quarter of 2020. This increase is primarily related to increases in commercialization activities for OLINVYK.

Cash and cash equivalents were \$97.7 million as of March 31, 2021, which the Company believes will be sufficient to fund the Company's operating expenses and capital expenditure requirements through the fourth quarter of 2022.

#### Conference Call and Webcast Information

The Company will host a conference call and webcast with the investment community on May 6, 2021, at 8:00 a.m. Eastern Time featuring remarks by Carrie Bourdow, President and Chief Executive Officer, Bob Yoder, Senior Vice President and 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 First Quarter 2021 Financial Results Conference Call and Webcast  
**Date:** Thursday, May 6, 2021  
**Time:** 8:00 a.m. ET  
**Conference Call Details:** Toll-Free: 855-465-0180  
International: 484-756-4313  
Conference ID: 3884579  
**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, 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](http://www.OLINVYK.com).

#### 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 epilepsy and chronic neuropathic pain, and TRV027 for acute respiratory distress syndrome and abnormal blood clotting in COVID-19 patients.

For more information, please visit [www.Trevena.com](http://www.Trevena.com)

#### 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, plans for potential future product candidates, commercialization of approved drug products and other statements containing the words "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, 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 commercialization of any approved drug product, 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 the discussions with the FDA or other regulatory agencies about any and all of its programs; uncertainties related to the commercialization of OLINVYK; 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 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 March 31,	
	2021	2020
Product revenue	\$ 209	\$ -
Total revenue	209	-
Operating expenses:		

Cost of goods sold	163	-
General and administrative	7,368	3,632
Research and development	2,636	2,191
Total operating expenses	<u>10,167</u>	<u>5,823</u>
Loss from operations	(9,958)	(5,823)
Other income	116	98
Net loss	<u>\$ (9,842)</u>	<u>\$ (5,725)</u>
Per share information:		
Net loss per share of common stock, basic and diluted	\$ (0.06)	\$ (0.06)
Weighted average shares outstanding, basic and diluted	<u>160,508,373</u>	<u>96,332,324</u>

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

	<u>March 31, 2021</u>	<u>December 31, 2020</u>
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 97,720	\$ 109,403
Accounts receivable, net	296	71
Insurance recovery	9,000	9,000
Prepaid expenses and other current assets	2,575	570
Total current assets	<u>109,591</u>	<u>119,044</u>
Restricted cash	1,310	1,310
Property and equipment, net	2,145	2,253
Right-of-use lease assets	5,022	5,119
Other assets	428	13
Total assets	<u>\$ 118,496</u>	<u>\$ 127,739</u>
<b>Liabilities and stockholders' equity</b>		
Current liabilities:		
Accounts payable, net	\$ 2,220	\$ 1,693
Accrued expenses and other current liabilities	1,568	5,168
Estimated settlement liability	9,000	9,000
Current portion of lease liabilities	725	703
Total current liabilities	<u>13,513</u>	<u>16,564</u>
Leases, net of current portion	6,911	7,101
Warrant liability	3	6
Total liabilities	<u>20,427</u>	<u>23,671</u>
Common stock	161	160
Additional paid-in capital	550,264	546,422
Accumulated deficit	(452,356)	(442,514)
Total stockholders' equity	<u>98,069</u>	<u>104,068</u>
Total liabilities and stockholders' equity	<u>\$ 118,496</u>	<u>\$ 127,739</u>



Nasdaq TRVN | May 2021

## 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 OLINIVYK; 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	 
Scott Applebaum	SVP, Chief Legal & Regulatory Officer	  
Mark A. Demitrack, M.D.	SVP, Chief Medical Officer	  
Barry Shin	SVP, Chief Financial Officer	  
Robert T. Yoder	SVP, Chief Commercial Officer	 

## BOARD OF DIRECTORS

Leon O. Moulder, Jr. <i>Chairman</i>	 	Marvin H. Johnson, Jr.	
Carrie L. Bourdow		Julie H. McHugh	  
Scott Braunstein, M.D.	  	Jake R. Nunn	
Michael R. Dougherty	 	Anne M. Phillips, M.D.	 
Maxine Gowen, Ph.D.	 	Barbara Yanni	



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# Trevena: Innovative CNS Company

<b>IV OLINVYK: Differentiated profile</b>	NCE approved for the management of acute pain in adults Commercial launch in Q1 2021; targeting 100 formulary wins by year-end
<b>Large market, targeted launch</b>	45M+ US hospital patients; 9M procedures is initial core focus \$1.5B+ market opportunity for core focus
<b>Novel CNS pipeline</b>	New mechanisms for acute migraine, diabetic neuropathic pain, epilepsy, opioid use disorder NCEs targeting significant unmet needs
<b>TRV027 for COVID-19</b>	Novel MOA to treat COVID-19 acute lung injury / abnormal clotting Selected for NIH ACTIV and REMAP-CAP trials; up to 600 COVID-19 patients on TRV027
<b>Strong financial position</b>	\$97.7M cash and cash equivalents as of 3/31/2021 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](http://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

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## Multiple Expected Catalysts

	PRE-CLINICAL	PHASE 1	PHASE 2	PHASE 3	NDA	EXPECTED CATALYSTS
<b>OLINVYK®</b> New chemical entity (mu-opioid receptor)	Acute pain IV		APPROVED			<ul style="list-style-type: none"> <li>Commercial launch ongoing</li> <li>Cleveland Clinic outcomes study</li> </ul>
<b>TRV027</b> Novel AT <sub>1</sub> receptor selective agonist	ARDS / abnormal clotting (COVID-19)		IV	Collaborations with NIH ACTIV and REMAP-CAP		<ul style="list-style-type: none"> <li>NIH ACTIV study</li> <li>REMAP-CAP study</li> </ul>
<b>TRV250</b> G-protein selective agonist (delta receptor)	Acute migraine oral / SC					<ul style="list-style-type: none"> <li>IND-enabling activities (oral)</li> </ul>
<b>TRV734</b> G-protein selective agonist (mu-opioid receptor)	Opioid use disorder oral		Collaboration with National Institute on Drug Abuse			<ul style="list-style-type: none"> <li>PoC study data (NIDA)</li> </ul>
<b>TRV045</b> Novel S1P receptor modulator	Diabetic neuropathic pain oral		Epilepsy collaboration with National Institutes of Health			<ul style="list-style-type: none"> <li>IND filing</li> <li>Ph1 initiation</li> </ul>

Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com).

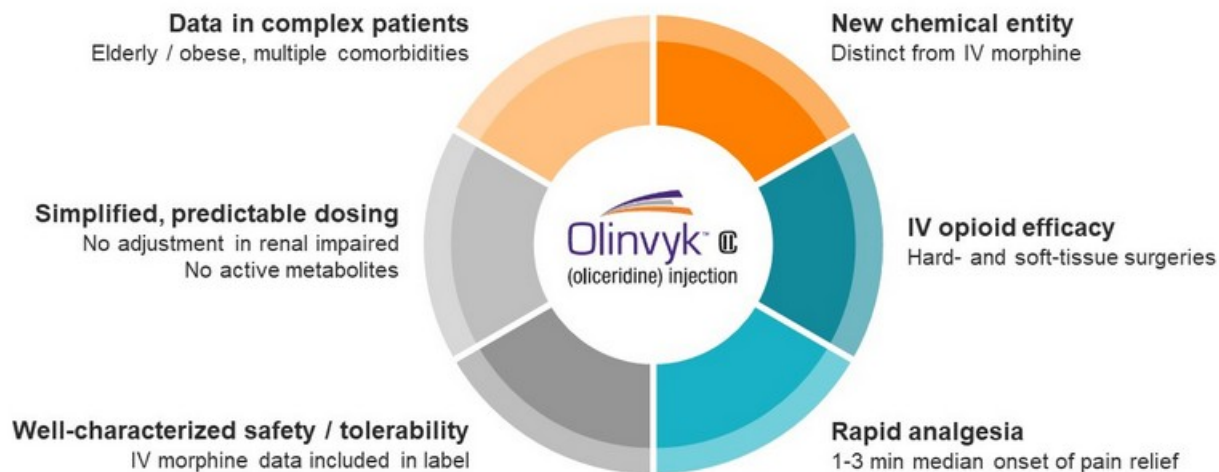


TRV250, TRV734, TRV027, and TRV045 are investigational products and are not approved by the FDA or any other regulatory agency.  
ARDS = Acute Respiratory Distress Syndrome; ACTIV = Accelerating COVID-19 Therapeutic Interventions and Vaccines;  
REMAP-CAP = Randomised, Embedded, Multi-Armorial, Adaptive Platform Trial for Community-Acquired Pneumonia; IND = Investigational New Drug; PoC = Proof-of-Concept

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## 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](http://www.OLINVYK.com).

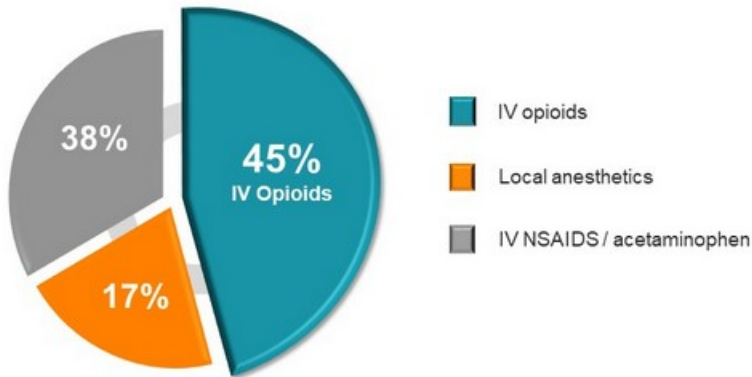
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# OLINVYK: Broad Indication for Acute Pain

Large acute market opportunity

US injectable analgesic hospital market unit volume<sup>1</sup>



45M patients receive IV opioids annually to treat acute pain<sup>1</sup>

- Unrivalled analgesic efficacy
- Top surgeries: Total knee arthroplasty, colectomy, hernia repair, spine fusion, C-section<sup>2</sup>

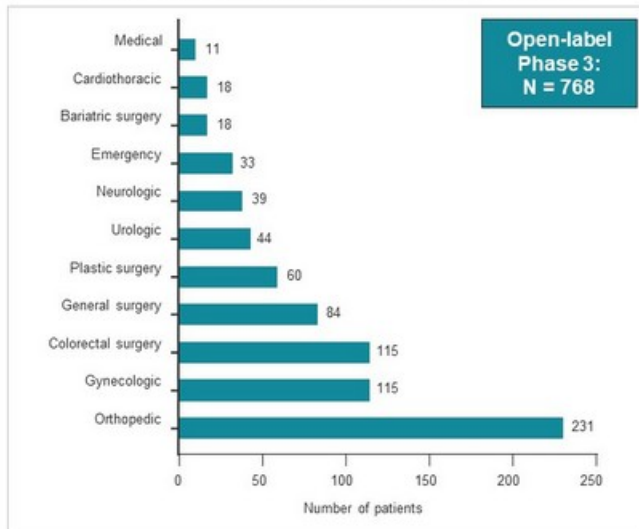
OLINVYK is indicated in adults for the management of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate. Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com).



NSAIDs = nonsteroidal anti-inflammatory drugs. 1) IMS MIDAS sales audit 2017; IV NSAIDs and Opioids. 2) Definitive database, and National Vital Statistics report, CDC 2015.

# OLINVYK Studied in Complex Surgeries & Patients

Broad range of surgeries / medical procedures



Open-label Phase 3: N = 768

### Complex patients included

- 32% ≥ 65 years; 46% BMI ≥ 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](http://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)<sup>1</sup>

	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

## 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
- **O<sub>2</sub> 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](http://www.OLINVYK.com).

<sup>1</sup>) OLINVYK Prescribing Information. Not an adequate basis for comparison of rates between the OLINVYK treatment group and the morphine treatment group.

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# OLINVYK Safety Differentiation Study w/ Cleveland Clinic

Further characterizes potential respiratory, GI and cognitive outcomes

- Open-label, multi-site study led by experts at Cleveland Clinic
- N = ~200 adults undergoing major non-cardiac surgery
- Patient enrollment to begin in Q3 2021

## Respiratory Safety

Predefined capnography and oximetry measures

Assessment via continuous respiratory monitoring

## GI Tolerability

Complete GI response endpoint

No vomiting and no antiemetic use through study period

## Cognitive Function

Somnolence, delirium, and sedation

Validated, standardized assessment scales



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# 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 mg<sup>1</sup>**

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 / 30mL
<b>WAC:</b>	\$17.50	\$25.75	\$110.00

**~\$100 / day**  
(estimated avg cost across procedures)

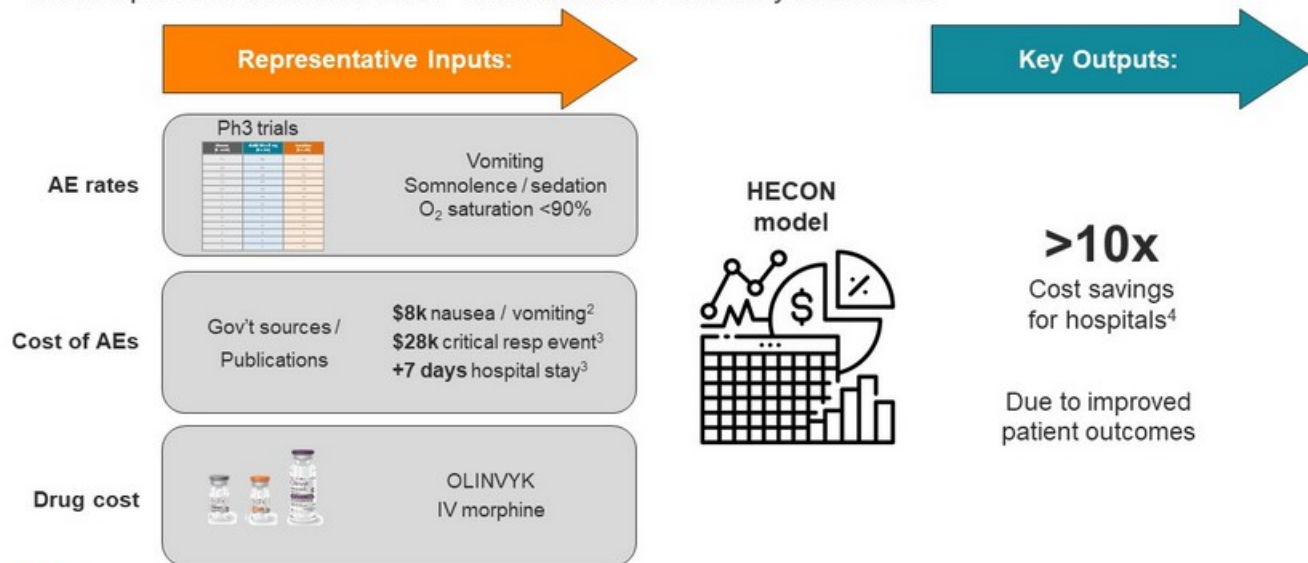


Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com).

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

## OLINVYK vs IV Morphine Health Economic Models

Models presented at AMCP 2021<sup>1</sup> and available to formulary committees



1) <https://www.trenda.com/publications> 2) Odeh, 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 as of Q1 2021

~40 account reps / MSLs deployed Q1 2021



### Health Care Practitioners (HCPs)

Anesthesiology, Orthopedic, Colorectal, Gynecologic

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



Hospitals



ASCs

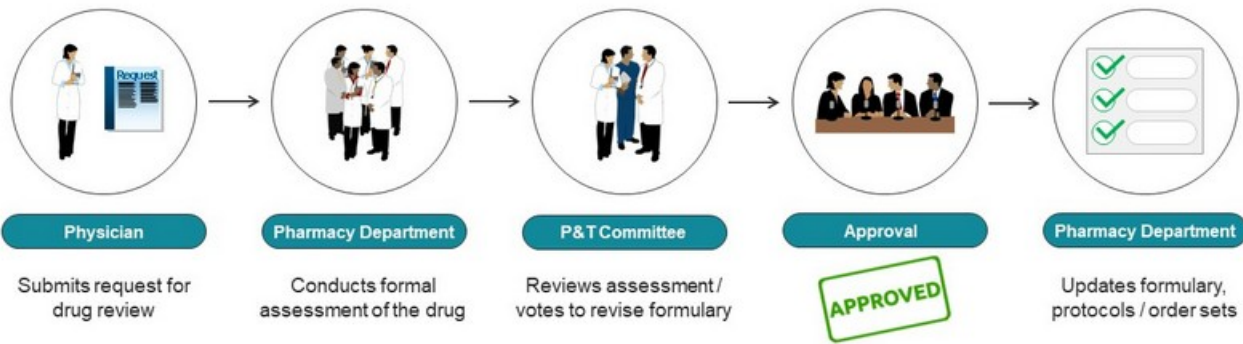
### Targeted Accounts

550 hospitals and 500 ambulatory surgery centers

- OLINVYK published safety data vs. IV morphine
- Published health economic / cost offset data\*



# Hospital Formulary Review Process



**YE 2021 target: 100 formulary wins**

# Differentiated Profile For Use in Hosp Outpatient & ASCs

Physician trial in outpatient can accelerate inpatient uptake

**Fast onset  
(1-3 min median)**

Improves patient throughput / time to discharge

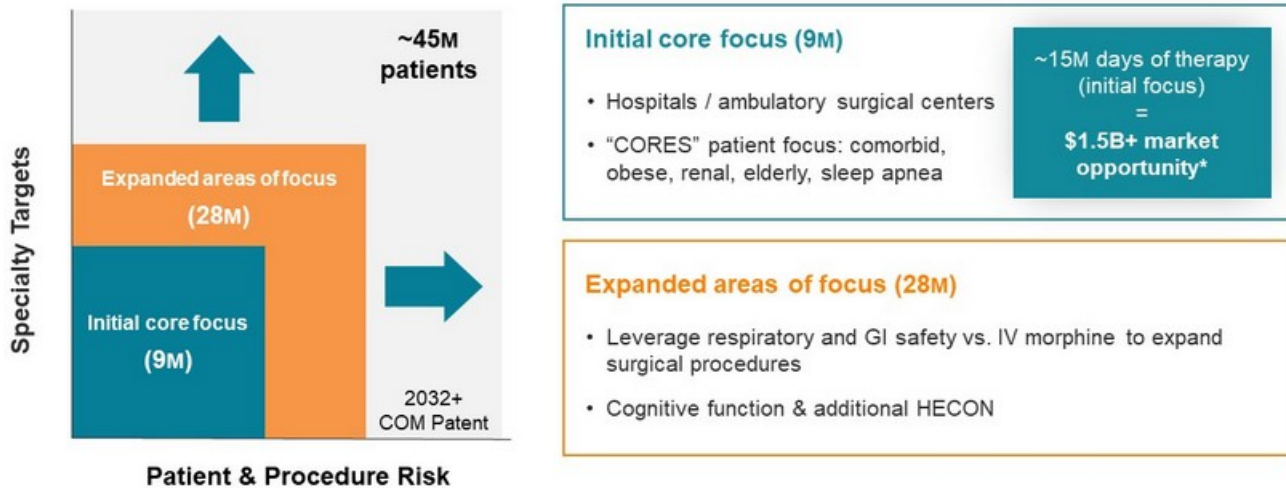
**No known active metabolites**

Streamlines dosing for short-term setting of care

**No dosage adjustments for renally impaired**

Addresses shift to complex patients

# 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](http://www.OLINVYK.com).



Source: Definitive Healthcare; American Hospital Association. \*Assumes ~\$100/day price for olliceridine. 2032 composition of matter patent expiration does not include potential patent extensions.

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## We Continue to Learn from and Adapt to COVID-19 Challenges

### Transitioned into commercial organization with minimal business interruption

- No delays in regulatory timelines; approval and DEA scheduling in 2H 2020
- Commercial supply of all 3 presentations made available to customers

### What we learned from our customers

- Procedure volumes may be slow to recover; backlog of elective surgeries building<sup>1</sup>
- IV drug shortages, increase in patient acuity continue to pressure healthcare systems

### Considerations for a successful field launch in 2021

- COVID-19 will continue impacting our customers; OLINVYK's value proposition remains relevant
- We will be making informed resource deployment decisions throughout first year of launch



<sup>1</sup> Kautman Hall 2020 State of Healthcare Performance Improvement Report: The Impact of COVID-19, October 2020.

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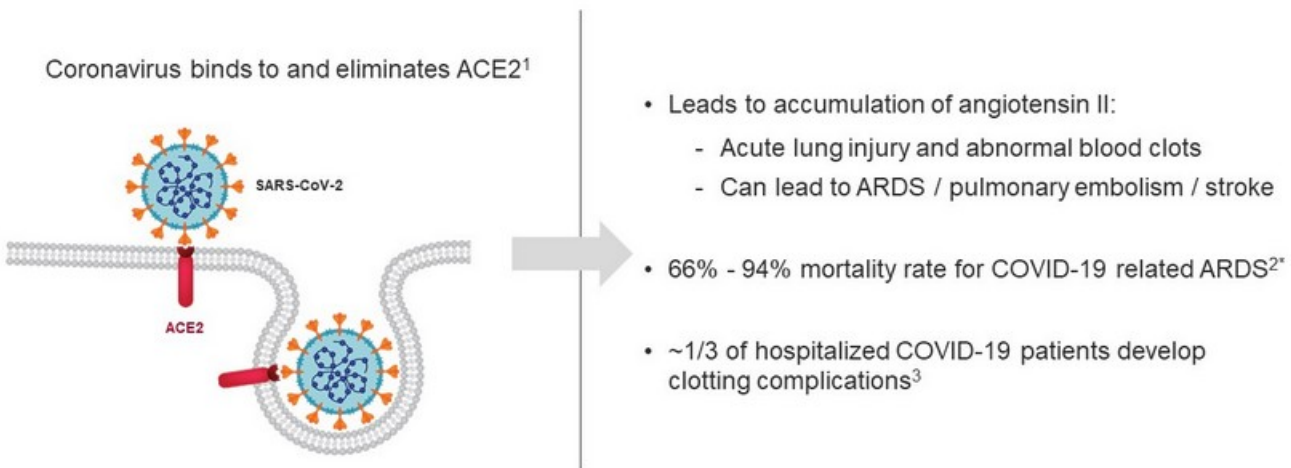


# TRV027

NCE targeting the AT<sub>1</sub> receptor in COVID-19

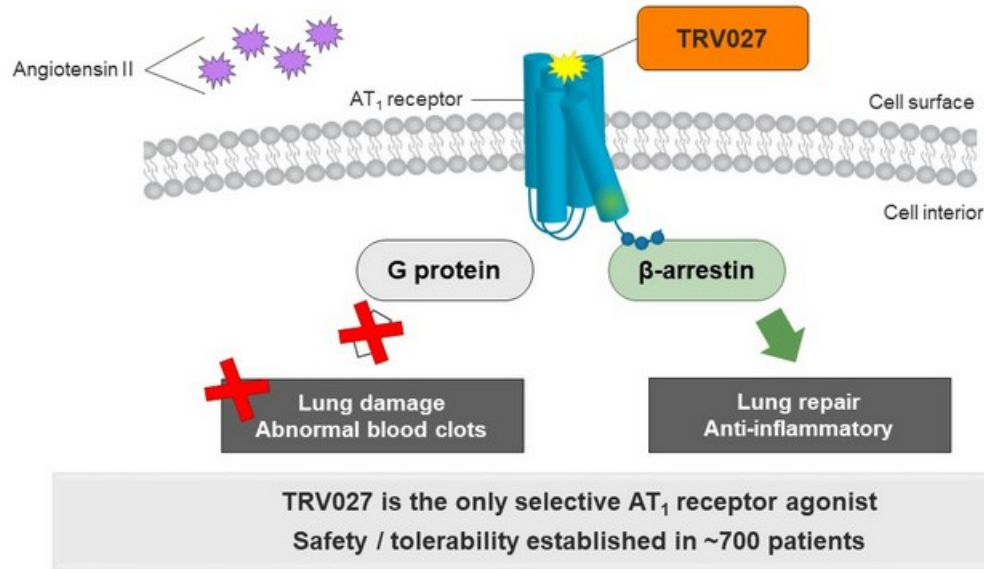
## Multi-Organ Damage From Coronavirus

Elimination of ACE2 protein leads to critical hormonal imbalances



## TRV027: New MOA for COVID-19

Mechanism targeted to improve lung function and prevent abnormal clotting



## TRV027 COVID-19 Study - Vanderbilt UMC (ACTIV-4d)

NIH-funded trial with Vanderbilt University Medical Center as lead coordinating site

- Part of NIH's ongoing ACTIV\* public-private partnership
- Multi-site, multi-arm, placebo-controlled trial
- ~300 COVID-19 patients  $\geq 18$  years old treated with TRV027

### Key outcomes to be studied:

Recovery  
Supplemental O<sub>2</sub> use  
Mechanical ventilation  
Mortality



# TRV027 COVID-19 Study - REMAP-CAP

Funded by REMAP-CAP, a global clinical trial network led by experts in pandemic response

- Multi-site, adaptive, Phase 2 / 3 trial in hospitalized COVID-19 patients (≥18 years)\*
- 200 - 300 COVID-19 patients treated with TRV027
- TRV027 administered (open label) in conjunction w/ACE inhibitor

Primary outcome:  
**In-hospital mortality + Organ failure support in ICU**  
 (21 days post-randomization)

Additional outcomes: ICU / hospital length of stay, ventilator-free days, organ failure-free days



\* Includes patients admitted to ICU

## Multiple Expected Catalysts

	PRE-CLINICAL	PHASE 1	PHASE 2	PHASE 3	NDA	EXPECTED CATALYSTS
<b>OLINVIK®</b> New chemical entity (mu-opioid receptor)	Acute pain	IV			APPROVED	<ul style="list-style-type: none"> <li>• Commercial launch ongoing</li> <li>• Cleveland Clinic outcomes study</li> </ul>
<b>TRV027</b> Novel AT <sub>1</sub> receptor selective agonist	ARDS / abnormal clotting (COVID-19)		IV		Collaborations with NIH ACTIV and REMAP-CAP	<ul style="list-style-type: none"> <li>• NIH ACTIV study</li> <li>• REMAP-CAP study</li> </ul>
<b>TRV250</b> G-protein selective agonist (delta receptor)	Acute migraine	oral / SC				<ul style="list-style-type: none"> <li>• IND-enabling activities (oral)</li> </ul>
<b>TRV734</b> G-protein selective agonist (mu-opioid receptor)	Opioid use disorder	oral			Collaboration with National Institute on Drug Abuse	<ul style="list-style-type: none"> <li>• PoC study data (NIDA)</li> </ul>
<b>TRV045</b> Novel S1P receptor modulator	Diabetic neuropathic pain	oral			Epilepsy collaboration with National Institutes of Health	<ul style="list-style-type: none"> <li>• IND filing</li> <li>• Ph1 initiation</li> </ul>

Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVIK.com](http://www.OLINVIK.com).



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;  
 REMAP-CAP = Randomised, Embedded, Multi-factorial, Adaptive Platform Trial for Community-Acquired Pneumonia; IND = Investigational New Drug; PoC = Proof-of-Concept

# 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 US<sup>1</sup>:



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 anxiety<sup>2</sup>



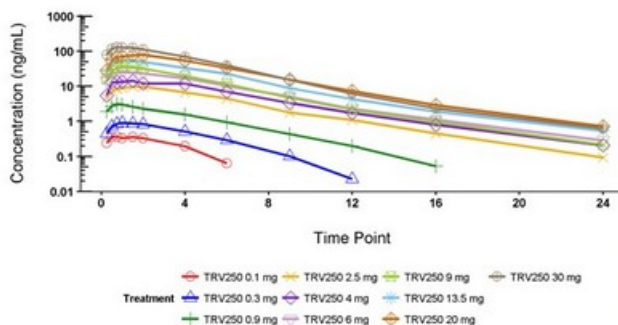
1) Data from Decision Resources, Pharmacor migraine market landscape and forecast 2018. 2) Moven et al., J Neurol Neurosurg Psychiatry, 2016. Icons made by Freepik from www.flaticon.com

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## 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

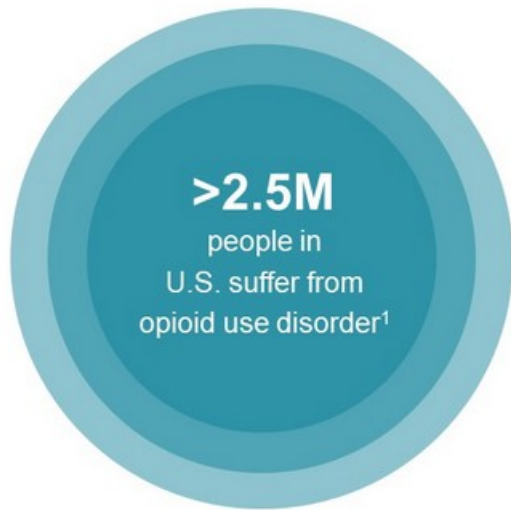


SC = subcutaneous Fossler MJ et al., CNS Drugs, Aug 2020;34(8):853-865.



# TRV734: Maintenance Therapy for Opioid Use Disorder

Selective agonism at  $\mu$  receptor: Potential for improved tolerability



## Ongoing collaboration with National Institute on Drug Abuse (NIDA)

- Nonclinical evidence of improved tolerability with TRV734
- NIDA study demonstrated reduced drug-seeking behavior in animal model of relapse<sup>2</sup>
- Current therapies not well tolerated, can hinder patient adherence

**NIDA-funded proof-of-concept patient study initiated**

# TRV045: Selective S1PR With No Lymphopenia

Uniquely selective for S1P-subtype 1 receptor

## S1P<sub>1</sub> receptors are expressed broadly in the CNS

Potential role in the treatment of:

### Neuropathic pain

- Inhibits pain sensation<sup>1</sup>
- Inhibits excitatory neuronal signaling<sup>2</sup>



### Epilepsy

- Neuroprotective effects<sup>3</sup>
- Modulates permeability of BBB, anti-inflammatory effects<sup>4</sup>



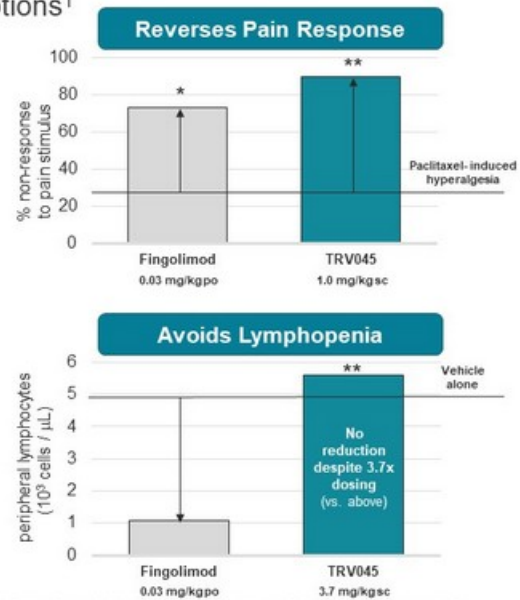
Avoids known safety issues associated with S1P receptor subtypes 2, 3, 4, 5:

Pulmonary, cardiac, and cancer-related effects<sup>5</sup>

# TRV045: Novel MOA for Diabetic Neuropathic Pain

5M+ people (US) suffer from DNP, with limited therapeutic options<sup>1</sup>

- DNP affects ~25% of people w/ diabetes<sup>2</sup>
  - Approved agents inadequate for ~50% of patients<sup>3,4</sup>
  - ~4x direct costs for DNP patients (vs diabetes alone)<sup>5</sup>
- In animals, TRV045 reversed neuropathic pain without immune-suppressing activity<sup>6</sup>
- Non-opioid MOA with broad potential for CNS indications
  - IND filing for DNP in 1H 2021
  - Epilepsy evaluation (NIH) ongoing



1) Rosenberger et al., Journal of Neural Transmission, 2020 and CDC National Diabetes Statistics Report, 2020. 2) Shilo et al., Current Diabetes Reports, 2019. 3) American Diabetes Association. 4) FDA product labels for Lyrica, Lyrica CR, Cymbalta, Nalcynta ER, and Gabapentin. 5) Sadosky et al., J Diabetes Complications, 2015. 6) OPM 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 12. 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.

## Trevena: Innovative CNS Company

<b>IV OLINVYK: Differentiated profile</b>	NCE approved for the management of acute pain in adults Commercial launch in Q1 2021; targeting 100 formulary wins by year-end
<b>Large market, targeted launch</b>	45M+ US hospital patients; 9M procedures is initial core focus \$1.5B+ market opportunity for core focus
<b>Novel CNS pipeline</b>	New mechanisms for acute migraine, diabetic neuropathic pain, epilepsy, opioid use disorder NCEs targeting significant unmet needs
<b>TRV027 for COVID-19</b>	Novel MOA to treat COVID-19 acute lung injury / abnormal clotting Selected for NIH ACTIV and REMAP-CAP trials; up to 600 COVID-19 patients on TRV027
<b>Strong financial position</b>	\$97.7M cash and cash equivalents as of 3/31/2021 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](http://www.OLINVYK.com).

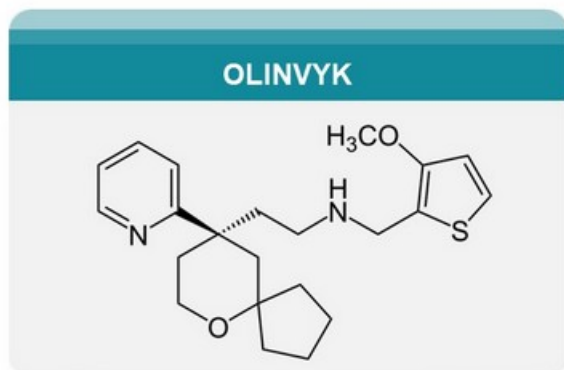


NCE = New Chemical Entity; MOA = Mechanism of Action; NIH = National Institutes of Health; ACTIV = Accelerating COVID-19 Therapeutic Interventions and Vaccines; REMAP-CAP = Randomised Embedded, Multi-factorial, Adaptive Platform Trial for Community-Acquired Pneumonia



# APPENDIX

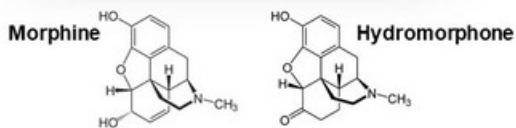
## OLINVYK: Distinct From IV Morphine / Hydromorphone



**Studied in >1,900 individuals**

**IV morphine included as active comparator**

**NCE with 2032+ COM patent<sup>1</sup>**



# 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:

- IV opioid efficacy
- Rapid onset of action
- Well-characterized respiratory safety / GI tolerability
- Low rates of vomiting and rescue antiemetic use

#### Large safety study:

- Real-world use in complex patients and target surgeries

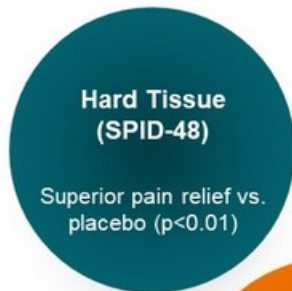


Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com).

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

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## OLINVYK: IV Opioid Efficacy and Rapid Onset



- Efficacy achieved in hard tissue & soft tissue models
- Rapid onset: perceptible pain relief within 2-5 minutes
- OLINVYK efficacy data in peer-reviewed journals  
*The Journal of Pain Research*<sup>1</sup> and *Pain Practice*<sup>2</sup>



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com).

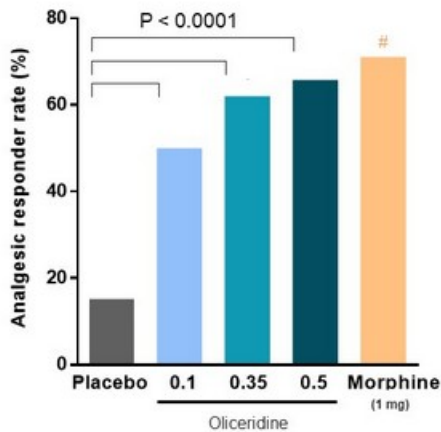
1) Vicusi ER et al. *J Pain Res.* 2019;12:927-943. Published 2019 Mar 11. 2) Singla NK et al. *Pain Pract.* 2019;19:715-731. Published 2019 Jun 04.

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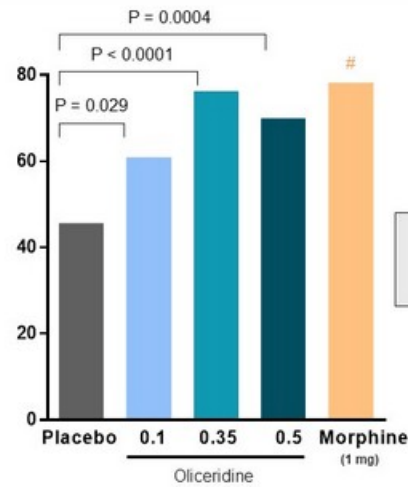
# Primary Efficacy Endpoint Achieved in Two Pivotal Studies

OLINVYK achieved IV opioid efficacy

Published in  
*The Journal of  
Pain Research*



**Ph3: Hard Tissue Surgery**  
Mean baseline pain = 6.7



**Ph3: Soft Tissue Surgery**  
Mean baseline pain = 7.3

Published in  
*Pain Practice*

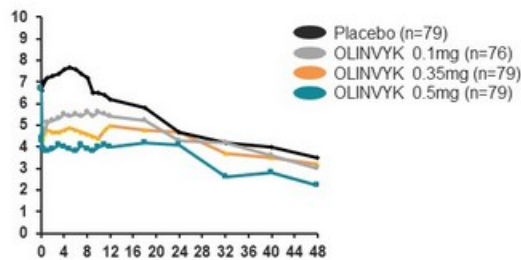
Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com)



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

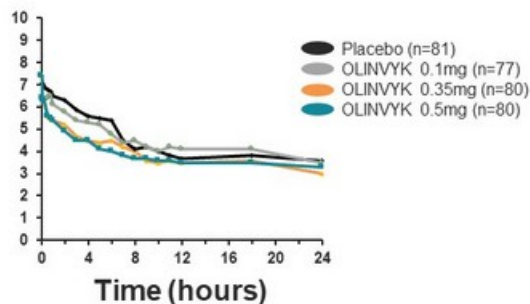
Average NRS Pain Score



### 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%



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com)

# 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 Events<sup>2</sup>  
(Components of the RSB calculation)**

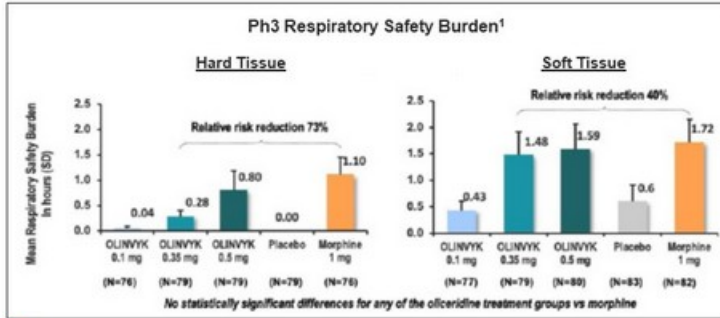
**Hard Tissue**

Orthopedic Surgery- Bunionectomy Study	Placebo (N=73)	Demand Dose OLINVYK			Morphine 1 mg (N=76)
		0.1 mg (N=78)	0.35 mg (N=79)	0.5 mg (N=79)	
<b>Components of the respiratory safety burden</b>					
≥1 respiratory safety event, n (%)	0	1 (1.3)	7 (8.9)	11 (13.9)	14 (18.4)
P value vs morphine	0.008	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	0.260	0.196	-
<b>Respiratory safety event measures</b>					
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	0.958	0.956	0.183	0.185	-
Sedation (MRPSS ≥3), n (%)	10 (2.7)	14 (18.4)	16 (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)	
<b>Components of the respiratory safety burden</b>					
≥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	-
<b>Respiratory safety event measures</b>					
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 (25.8)
P value vs morphine	0.25	0.02	0.83	0.65	-

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

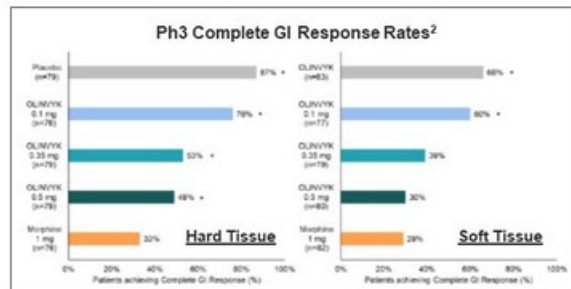
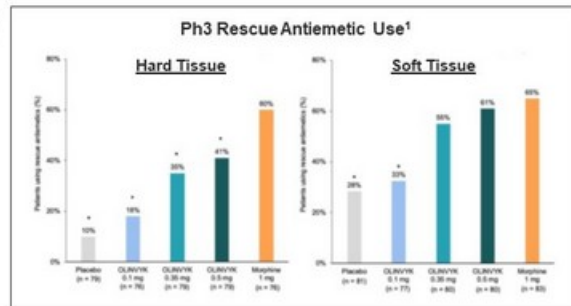


1) Figure 2-8, Section 2.2, OLINVYK Evidence Dossier for Formulary Consideration. 2) Figures 3-4 and 3-8, Section 3.1, OLINVYK Evidence Dossier for Formulary Consideration.

# 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” endpoint<sup>3</sup>
- 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.



# Customer Facing Organization

Partnering with Syneos Health to provide “best in class” commercial support



- Allows for execution speed and flexibility in deployment
- Full range support: source, hire, train and deploy customer-facing roles
- Ability to flex as business needs evolve

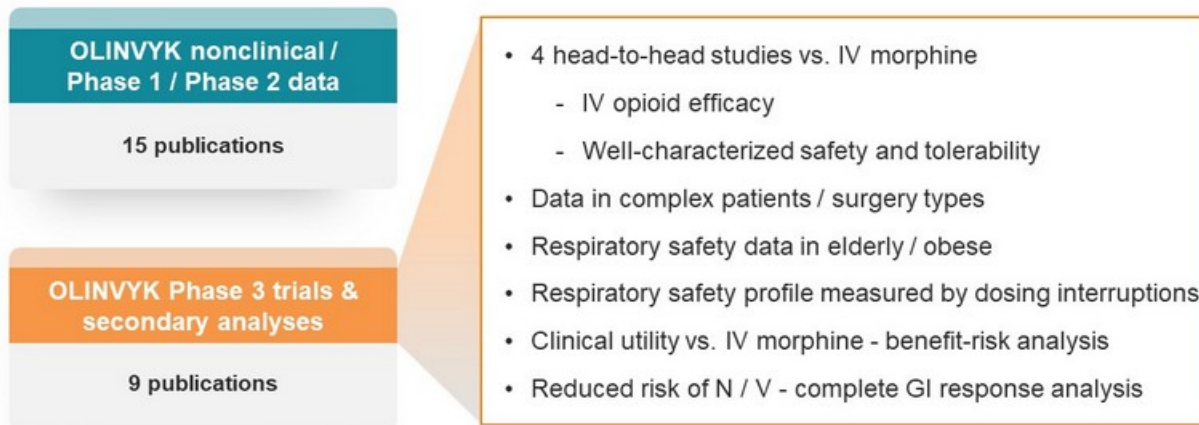
- ### 40 Customer-Facing Roles
- **Sales:** Institutional Account Managers
  - **Trade & Access:** Regional Account Managers
  - **Medical:** Medical Science Liaisons

## Launch Team: Top Talent with Hospital Experience

Role	Highlights
Medical Science Liaisons	<ul style="list-style-type: none"> <li>100% with Advanced degrees</li> <li>100% with Health Econ background</li> <li>100% with hospital and launch experience</li> </ul>
Regional Sales Managers	<ul style="list-style-type: none"> <li>20+ Years experience</li> <li>Buy &amp; Bill</li> <li>Hospital &amp; ASC experience</li> </ul>
Key Account Managers	<ul style="list-style-type: none"> <li>21 years (avg) in Pharma</li> <li>100% with GPO/IDN experience</li> <li>100% with recent launch experience</li> </ul>
Representatives	<ul style="list-style-type: none"> <li>18 years experience</li> <li>100% with recent launch experience</li> <li>100% with Hospital experience</li> <li>Majority with therapeutic experience</li> </ul>

# Robust Set of Peer-Reviewed Publications

Comprehensive overview of OLINVIK development program



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVIK.com](http://www.OLINVIK.com).

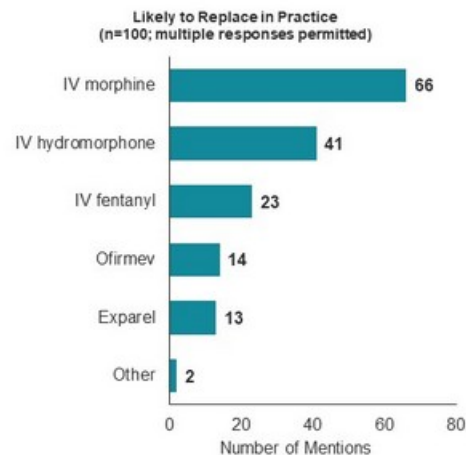
See [www.trenda.com](http://www.trenda.com) for full manuscripts and abstracts. These publications will be used in a manner consistent with FDAMA sections 114 and 401 and the FDA Guidances thereunder.

## Positive Feedback from Formulary Stakeholders<sup>1</sup>

~75% of formulary stakeholders find OLINVIK's published data clinically meaningful:<sup>2</sup>



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



Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVIK.com](http://www.OLINVIK.com).

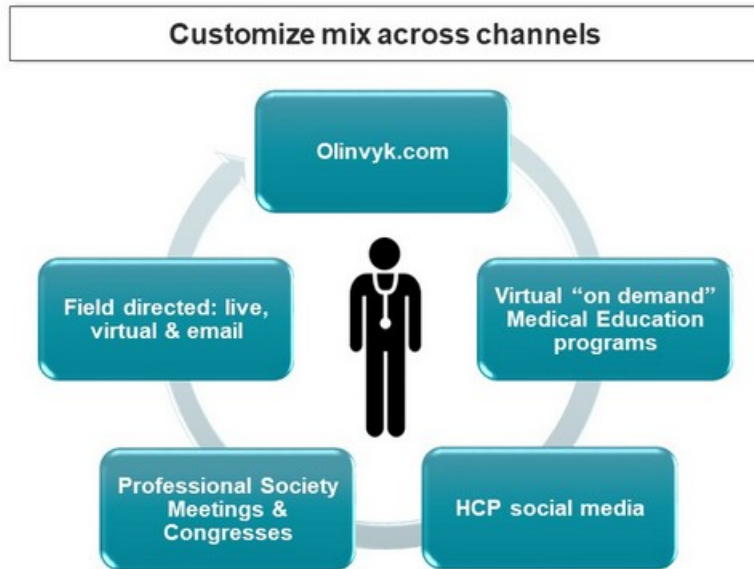


1) Qualitative Pricing research, Charles River Associates, April 2020. 2) "Are the improvements in respiratory safety events and GI tolerability clinically meaningful?" Based on OLINVIK Ph3 clinical trial data.



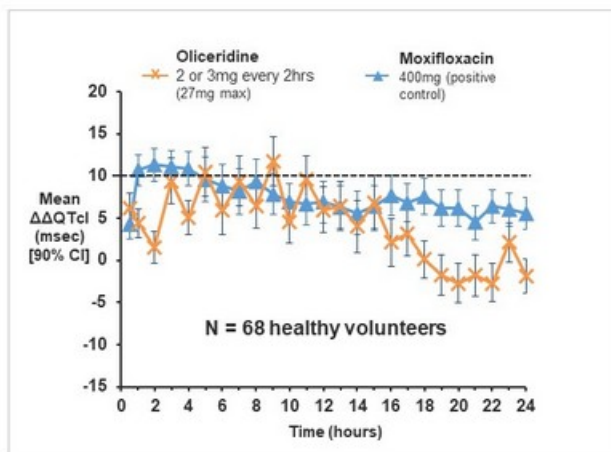
# Omni-channel Approach for HCP Engagement

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



## 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**  
Δ >60 ms; >500 ms absolute
- **Well tolerated, no SAEs\***  
92% reached max daily dose

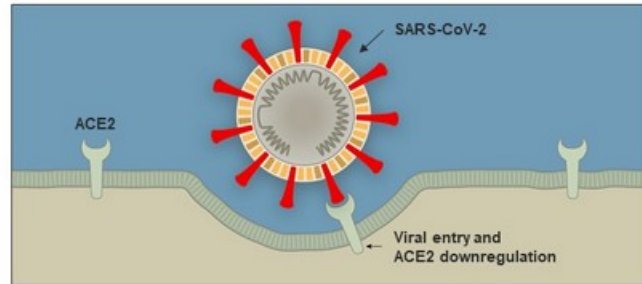
\*The effect on QT prolongation at total cumulative daily doses >27 mg has not been studied in a thorough QT study. Total cumulative daily doses exceeding 27 mg per day may increase the risk for QTc interval prolongation. Therefore, the cumulative total daily dose of OLINVYK should not exceed 27 mg.

Please see Important Safety Information including BOXED WARNING at the end of presentation. Full Prescribing Information at [www.OLINVYK.com](http://www.OLINVYK.com).

# Interaction Between the AT<sub>1</sub> Receptor and ACE2 in COVID-19

Downregulation of ACE2 by coronavirus indirectly promotes activation of the AT<sub>1</sub> receptor

- Coronavirus binds to and downregulates angiotensin converting enzyme 2 (ACE2)<sup>1</sup>
- Decrease in ACE2 elevates angiotensin II levels
  - Angiotensin II activates AT<sub>1</sub> receptor
  - No breakdown of angiotensin II into Ang(1-7)
    - Normally, Ang(1-7) acts as a  $\beta$ -arrestin-biased ligand at the AT<sub>1</sub> receptor<sup>2</sup>
    - Protective therapeutic benefits in the lungs<sup>3</sup>



## TRV027 COVID-19 Study - Imperial College London

Interim review by DMSC supports transition to REMAP-CAP trial

- Randomized, double-blind, placebo-controlled proof-of-concept study
- N = ~60 (30 per arm) COVID-19 patients
  - Hospitalized, non-ventilated
  - $\geq 18$  years old
- IV infusion of placebo or TRV027 for 7 days (12 mg/hr)
- Review of interim data by DMSC found no safety concerns and supported advancement to more extensive study with clinical efficacy outcomes

**ICL winding down study**  
(Transition to REMAP-CAP)

**Primary ICL endpoint:**  
Reduction of abnormal clotting  
associated with COVID-19<sup>1</sup>



**Imperial College  
London**

## Delta Receptor Agonists Have Unique Benefits

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Potential utility for a variety of CNS indications

### **Triptans / Ditans**

- Target: serotonin receptors → mediate vascular excitability (associated CV risk)<sup>1</sup>
- Migraine-specific treatment

### **CGRPs**

- Target: CGRP receptors → regulate neuronal structures involved in pain signaling<sup>2</sup>
- Migraine-specific treatment

### **Delta receptor agonists**

- Target: delta receptors → located in pain pathways; also distributed throughout brain regions associated with sensory information, emotional processing, and reward / impulsivity<sup>3</sup>
- Potential for broad therapeutic application

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# 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
- Are 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 CO<sub>2</sub> retention, such as those with evidence of increased intracranial pressure or brain tumors, as a reduction in respiratory drive and the resultant CO<sub>2</sub> 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.
- 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 CO<sub>2</sub> retention, such as those with evidence of increased intracranial pressure or brain tumors, as a reduction in respiratory drive and the resultant CO<sub>2</sub> 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.
- 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.

## Trevena Announces TRV027 Selected by NIH-Funded ACTIV Initiative For COVID-19 Trial

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*Vanderbilt University Medical Center (VUMC) is coordinating multiple-arm, multi-site ACTIV-4d study targeting RAAS*

*TRV027 to be dosed in ~300 COVID-19 patients*

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CHESTERBROOK, Pa., May 6, 2021 (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 announced that TRV027, the Company's novel AT<sub>1</sub> receptor selective agonist, has been selected for an NIH ACTIV (Accelerating COVID-19 Therapeutic Interventions and Vaccines) trial in COVID-19 patients.

"The NIH's ongoing ACTIV public-private partnership has facilitated the unprecedented development of cutting-edge vaccines and therapeutics to fight the COVID-19 pandemic. I am honored to be joining their mission as they continue to search for new treatments to combat the severe complications caused by the novel coronavirus," said Carrie Bourdow, President and Chief Executive Officer of Trevena, Inc. "Vanderbilt University Medical Center has emerged as a leader in COVID-19 research in the U.S., and I look forward to supporting their investigation of TRV027 as a potentially meaningful therapy for COVID-19 patients."

TRV027 combats disruption within the renin-angiotensin-aldosterone system (RAAS) by specifically binding to and rebalancing AT<sub>1</sub> receptor activation, blocking the damaging pathway that leads to acute lung damage and abnormal blood clotting, while activating the cellular pathway that selectively targets reparative actions that improve lung function and promote anti-inflammatory effects. The trial, known as ACTIV-4d RAAS, is a component of the National Heart, Lung, and Blood Institute (NHLBI) of the NIH's CONNECTS (Collaborating Network of Networks for Evaluating COVID-19 and Therapeutic Strategies) initiative. The objective of ACTIV-4d RAAS is to evaluate treatments targeting the RAAS and to determine whether modulation of the RAAS is an effective strategy for preventing progression to critical illness, multiorgan failure, or mortality in hospitalized COVID-19 patients.

"The development of symptomatic treatments is critical in the fight against the COVID-19 pandemic. TRV027 represents a new approach to targeting the AT<sub>1</sub> receptor and reversing organ damage caused by RAAS imbalance, while harnessing the protective therapeutic benefits of this receptor target," said Sean Collins, M.D., M.Sc., Principal Investigator of the ACTIV-4d trial, Co-Director of the Vanderbilt Coordinating Center and Professor of Emergency Medicine, Vanderbilt University Medical Center. "I am very pleased with this opportunity to study TRV027 and to have Trevena's support as we continue our search for new treatments for COVID-19 patients."

### About ACTIV-4d

This is a multi-site, randomized, placebo-controlled, clinical trial with multiple treatment arms, each enrolling approximately 300 COVID-19 patients ≥ 18 years old. Multiple trial arms will test investigational agents, including TRV027, that target the RAAS through distinct mechanisms of action. The trial is evaluating the impact of TRV027 on recovery, supplemental oxygen use, need for mechanical ventilation and mortality.

### About the NIH ACTIV Initiative

On April 17, 2020, the National Institutes of Health (NIH) announced the Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV) public-private partnership to develop a coordinated research strategy for prioritizing and speeding development of the most promising treatments and vaccines.

Coordinated by the Foundation for the National Institutes of Health (FNIH), ACTIV brings NIH together with its sibling agencies in the Department of Health and Human Services, including the Biomedical Advanced Research and Development Authority (BARDA), Centers for Disease Control and Prevention (CDC), and the U.S. Food and Drug Administration (FDA); other government agencies including the Department of Defense (DOD) and Department of Veterans Affairs (VA); The Operation; the European Medicines Agency (EMA); and representatives from academia, philanthropic organizations, and numerous biopharmaceutical companies.

### About TRV027

TRV027 is a novel AT<sub>1</sub> receptor selective agonist that is currently being investigated by multiple institutions as a potential treatment for acute lung injury contributing to ARDS and abnormal blood clotting in COVID-19 patients. It has previously been studied in 691 individuals, has a well-characterized pharmacokinetic profile, and has demonstrated efficacy, potency, and selectivity at the AT<sub>1</sub> receptor in nonclinical studies. In previous clinical trials, there was a low dropout rate associated with TRV027, and no significant safety issues were reported. TRV027 is currently being evaluated in the REMAP-CAP COVID-19 ACE2 RAS Modulation Domain, an international, multi-site, randomized, Phase 2 / 3 adaptive clinical trial in hospitalized COVID-19 patients. In April 2021, the Company filed a non-provisional patent application and PCT application with the United States Patent and Trademark Office covering the use of TRV027 to treat ARDS and the prevention or treatment of abnormal clotting in COVID-19 patients.

### 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 epilepsy and chronic neuropathic pain, and TRV027 for acute respiratory distress syndrome and abnormal blood clotting in COVID-19 patients.

### 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, 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 the discussions with FDA, the timing of FDA's decision on the oliceridine NDA; 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 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.

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