

THERAPY

IS IT POSSIBLE TO UNLOCK THE BRAIN TO HEAL ITSELF WITH VIRTUAL REALITY

Montana Governor's Conference Everyday Heroes September 28th, 2023

GERRY STANLEY, M.D., FAAFP, P-CEO **SENIOR VICE PRESIDENT & CHIEF MEDICAL OFFICER**

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THERAPY

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RESEARCH PARTNERSHIP DISCLOSURE







Northwestern University





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VIRTUAL REALITY & PSYCH-SOC D.O.H. IN THE LITERATURE





Virtual Reality https://doi.org/10.1007/s10055-018-0346-3

ORIGINAL ARTICLE



Virtual memory palaces: immersion aids recall

Eric Krokos¹ · Catherine Plaisant² · Amitabh Varshney

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ntal and Social Hee Abstract Virtual reality displays, such as head-mounted displays (HMD), afford us a superior spatial awareness by leveraging our vestibular and proprioceptive senses, as compared to traditional desktop displays. Since classical times, people have used memory palaces as a spatial mnemonic to help remember information by organizing it spatially and associating it with salient features in that environment. In this paper, we explore whether using virtual memory palaces in a head-mounted display with head-tracking (HMD condition) would allow a user to better recall information than when using a traditional desktop display with a mouse-based interaction (desktop condition). We found that virtual memory palaces in HMD condition provide a superior memory recall ability compared to the desktop condition. We believe this is a first step in using virtual tant shifts in our responses to patie environments for creating more memorable experiences that enhance productivity through better recall of large amounts of mation away from the biomedical pa information organized using the idea of virtual memory palaces.

> Keywords Immersion · Experimental methods · HMD · 3D navigation · Visualization · Psychology · Training · Education User study · Perception · Presence

mental health may contribute to a help us remember information. From cave paintings, clay skills related to de-escalation, emoti tablets, and papyrus to modern paper, audio, and video, building. They can develop strategie we have used technology to encode and recall information. involving mental health experts. A This paper addresses the question of whether virtual envivary greatly from that of police, ort ronments could be the next step in our quest for better tools to help us memorize and recall information. Virtual reality displays, in contrast to traditional displays, can combine vislearning new skills for engagement ually immersive spatial representations of data with our ves-A key aspect of medical exp tibular and proprioceptive senses. The technique of memory

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palaces provides a natural spatial mnemonic to assist in recall. Since classical times, people have used memory palaces (method of loci), by taking advantage of the brain's ability to spatially organize thoughts and concepts (Julian 1976; Roediger 1979; Knauff 2013). In a memory palace, one mentally navigates an imagined structure to recall information (Yates 1992: Harman 2001). Even the Roman orator Cicero is believed to have used the memory palace technique by visualizing his speeches and poems as spatial locations within the auditorium he was in (Yates 1992: Godwin-Jones 2010). Spatial intelligence has been associated with a heightened sense of situational awareness and of relationships in one's own surroundings (Mayer et al. 2001; Gardner 2006).

Research in cognitive psychology has shown that recall is superior in the same environment in which the learning took place (Godden and Baddeley 1975). Such findings of context-dependent memory have interesting implications for virtual environments that have not yet been fully explored. Imagine, for instance, a victim of a street aggression being asked to recall the appearance details of their assailant. Virtual environments that mirror the scene of the crime could provide superior assistance in recall by placing the victim back into such an environment

In this paper, we present the results of a user study that examined if virtual memory palaces could assist in superior

Trauma exhibits itself in a range of patient symptoms

TRAUMA DRIVES WORKERS' **COMP CLAIMS** TREATMENT

Depression

Anxiety

Sleep Deprivation

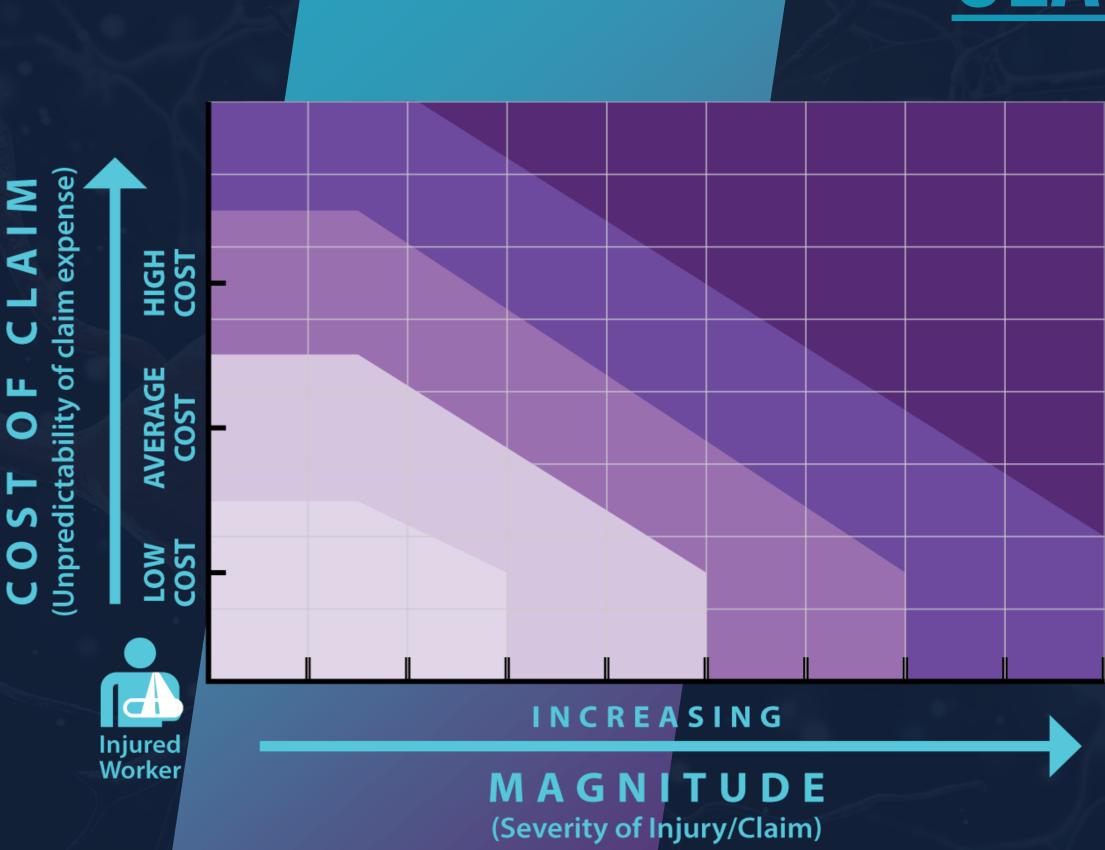


PTSD



"What is the Problem we are Solving?"







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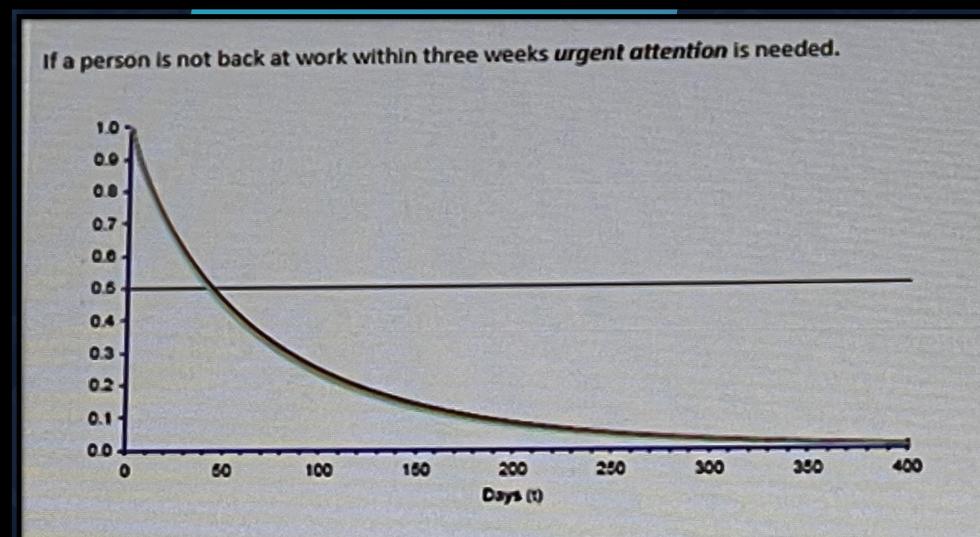
CLAIMS VOLATILITY

What drives volatility?

- Underlying psychosocial issues
- Opioid dependency
- Interventional pain referral
- Psychiatry referrals
- Plaintiff's attorney

Cost Containment Strategy

The Vx Therapy addresses four of the volatility drivers above

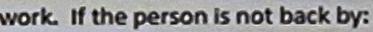


This graph shows that the likelihood of return to work goes down the longer the person is off work. If the person is not back by:

- 20 days the chance of getting back to work is 70%
- 45 days the chance of getting back to work is 50%
- 70 days the chance of getting back to work is 35%

The first few weeks are crucial. If work absence continues beyond a few weeks it is time to "pull out all stops".





"Insanity"





The definition of insanity is doing the same thing over and over and expecting a different result. -Albert Einstein







IT'S ONLY A VIRTUE IF YOU'RE NOT A SCREWUP.



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WHAT DO YOU GET?

CURRENT PROCESS





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WHAT ARE WE MISSING?

Revenue

Access

Volume

Outcomes



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Experience

Industry

WHAT ARE WE MISSING?

Revenue

Access

Volume

Outcomes



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Experience

Industry

WHAT ARE WE MISSING?

Revenue

Access

Volume

Outcomes



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Experience The Patient Industry















WHO ARE WE TREATING



WHERE ARE WE DELIVERING CLINICAL CARE...???







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VIRTUAL REALITY IS NOT NEW





1957

First virtual reality multimedia device

1966 First basic flight simulator





1978 Virtual

reality travel experience

1997

VR used

for PTSD therapy

2001

Used in hospital burn units to manage pain









2010

Oculus Rift developed headset prototype

2020

VR used as an effective tool for pain management in the healthcare industry

VR or Vx? What is the difference



VR or Vx



VIRTUAL REALITY

• Self-Guided Digital Platform

- **Distraction principle** can reduce perceived pain by up to 50%
 - Undefined length of treatment
 - Inpatient, Outpatient or In-Home treatment models
 - **Minimal to no side effects** (unlike pharmaceuticals), but can lead to exaggerated anxiety

VX THERAPY

Bio-Psycho-Social Model of Care

- Guided by Master's Level Behavioal Health clinicians
- 90-Day treatment program: In-Home Model
- Guidance in personalized Goal Setting for sleep, behavioral, social, and physical/mobility goals to facilitate a return to normalcy.
- Neuroplastic Change develops permanent resiliency for pain, depression, anxiety, PTSD and sleep disturbances
- Minimal to no side effects (unlike pharmaceuticals)

VR or Vx



VIRTUAL REALITY

Solf Guiaea Digital Platform

- **Distraction principle** con reduce perceived pain by up to 50%
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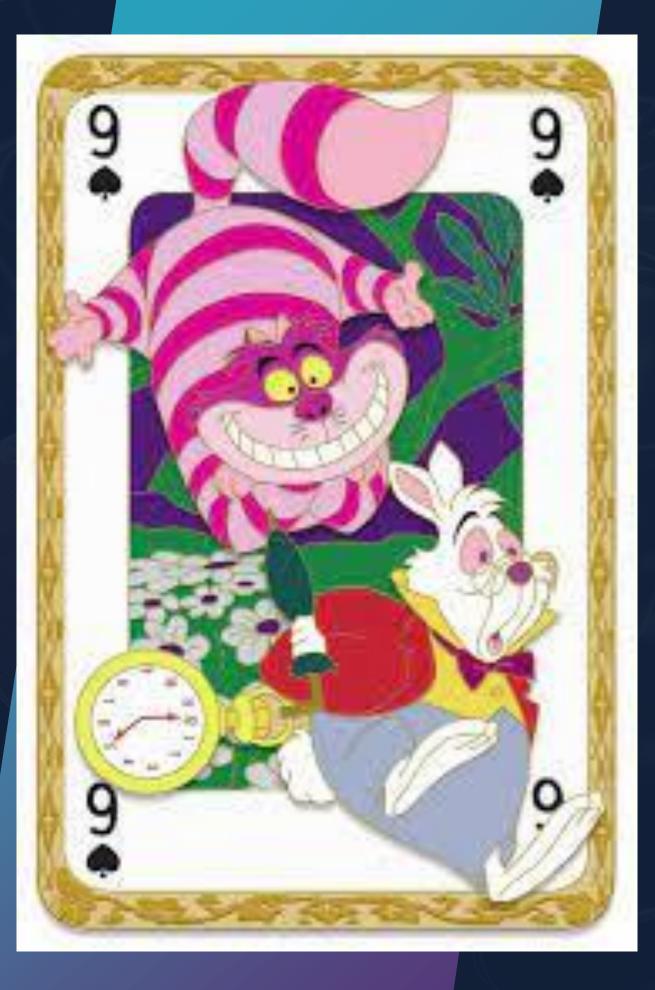
VX THERAPY

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DOES HAVING A GUIDE MATTER???

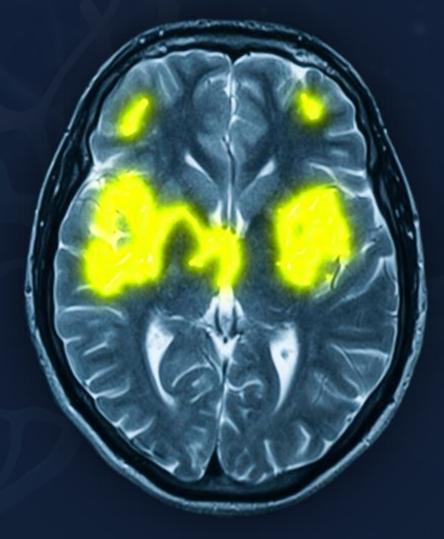
VIRTUAL REALITY HAS BEEN PROVEN TO REDUCE PERCEIVED PAIN BY ~50%

PAIN IN THE BRAIN

The yellow portions of these fMRI images depict the brain as it is experiencing pain sensations

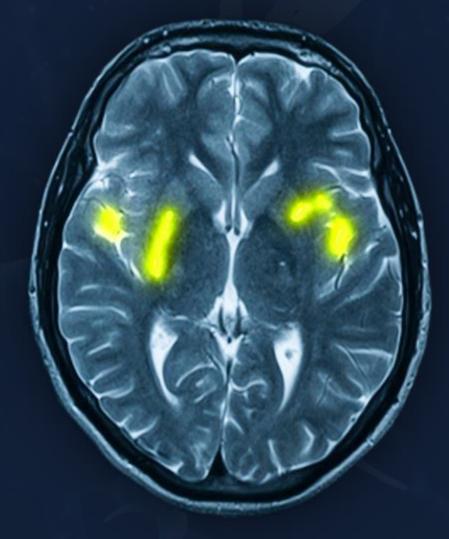
Note how experiencing immersive virtual reality dramatically reduces the effects of pain

WITHOUT VR

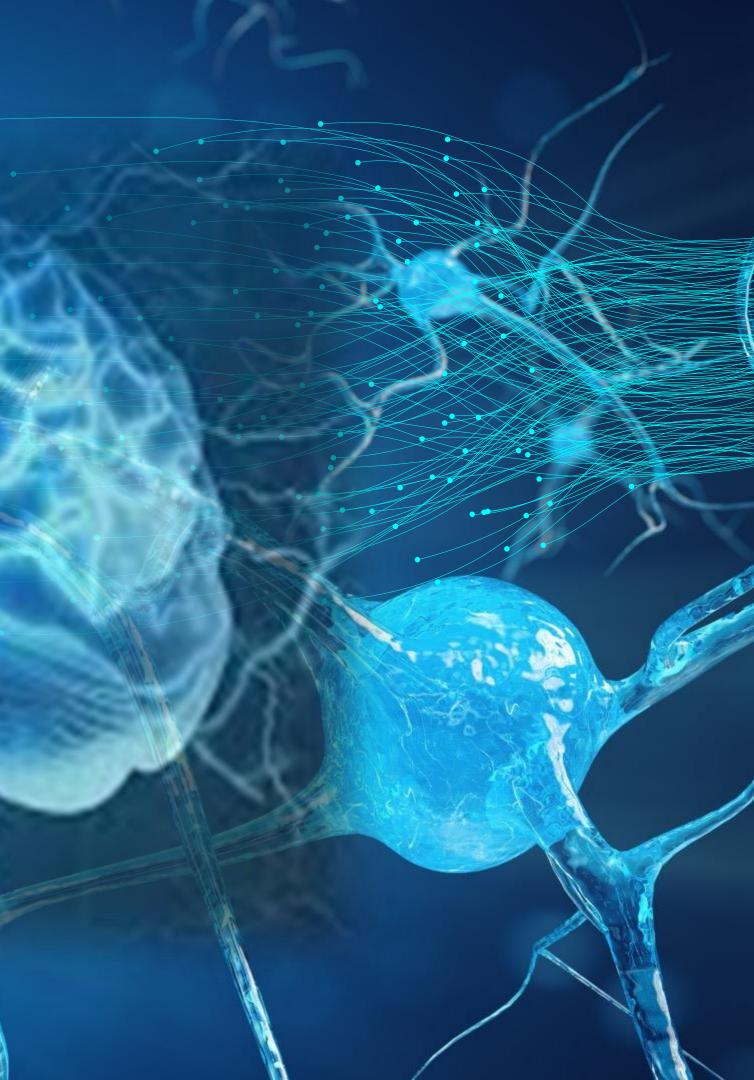




WITH VR



NEUROPLASTICITY











NEUROPLASTICITY.









NEUROPLASTICITY.







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NEUROPLASTICITY...



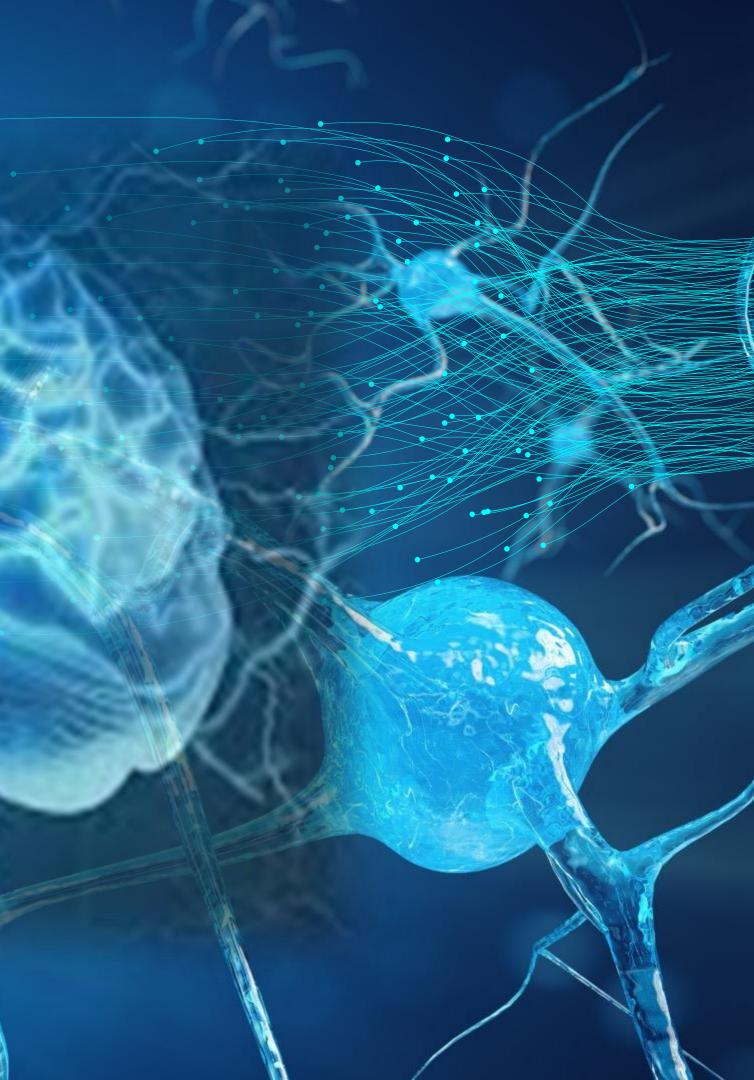




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NEUROPLASTICITY...

NEUROPLASTICITY



CAN WE TAP INTO THE POWER **OF THE HUMAN BRAIN?**





VX THERAPY: THE APPLICATION OF VIRTUAL REALITY

LEVERAGES 30+ YEARS OF RESEARCH VALIDATING THE EFFICACY OF VR IN REDUCING TRAUMA SYMPTOMS

FOUR EXPERIENCE CATEGORIES



KNOWLEDGE

Teaches patients healthy ways to think about pain



DISTRACTION

Provides analgesic effect that reduces pain levels by up to 50%



MEDITATION

Reduce stress, anxiety, and depression





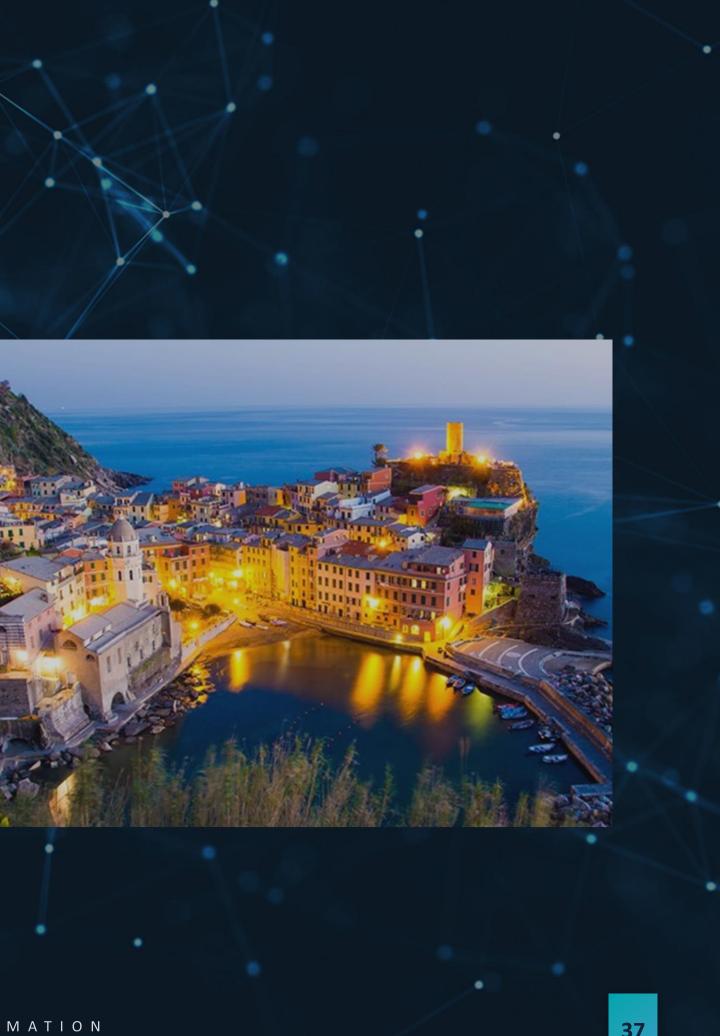
ESCAPE

Occupies patients between chronic pain episodes thus minimizing pain catastrophization

ESCAPE

Positive experiences reduce stress and improve mood
Prevents pain flare-ups
Gives patients what they want in the short term





KNOWLEDGE

Change awareness of bodily signals Patient Empowerment





DISTRACTION

• VR distraction reduces maladaptive brain activity
• Distraction helps break habits
• Strengthen healthier habits

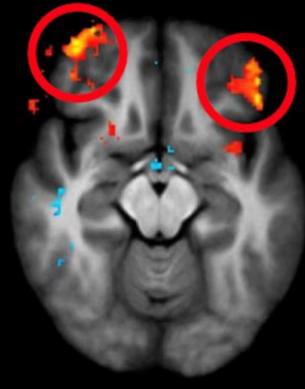




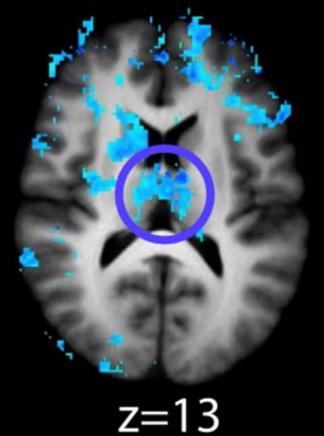
MEDITATIO

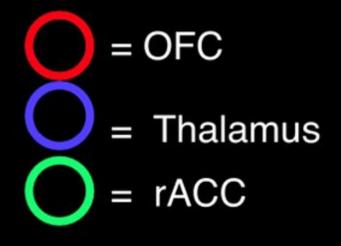
Basic meditation done at a very high level

Brief mindfulness training



z=-14





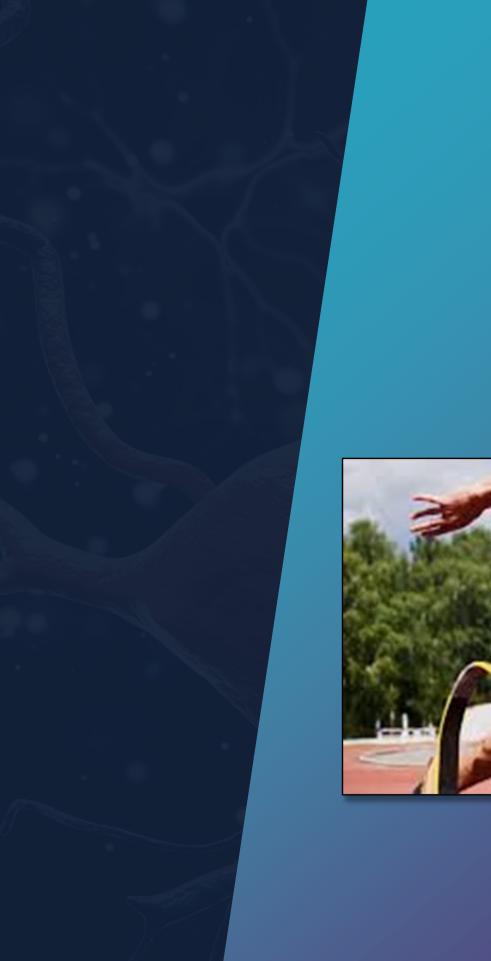


-2.3

-9.4

z=26

ΜΑΤΙΟΝ









WHO, OR WHAT, REWETREATING







Outcomes

Expense



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Experience

WHAT IS OUR L?





Outcomes

Expense



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Experience

WHAT IS OUR **L**?

CLINICALLY VALIDATED OUTCOMES – A HOME RUN OUTSTANDING IMPROVEMENTS BY EVERY MEASURE OF SUCCESS = SAVINGS FOR OUR CUSTOMERS



40% **Reduction of** pain



69% Reduction of opioid usage



300%

Increased participation in physical and social activities



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72% **Reduction in behavioral** health impairments



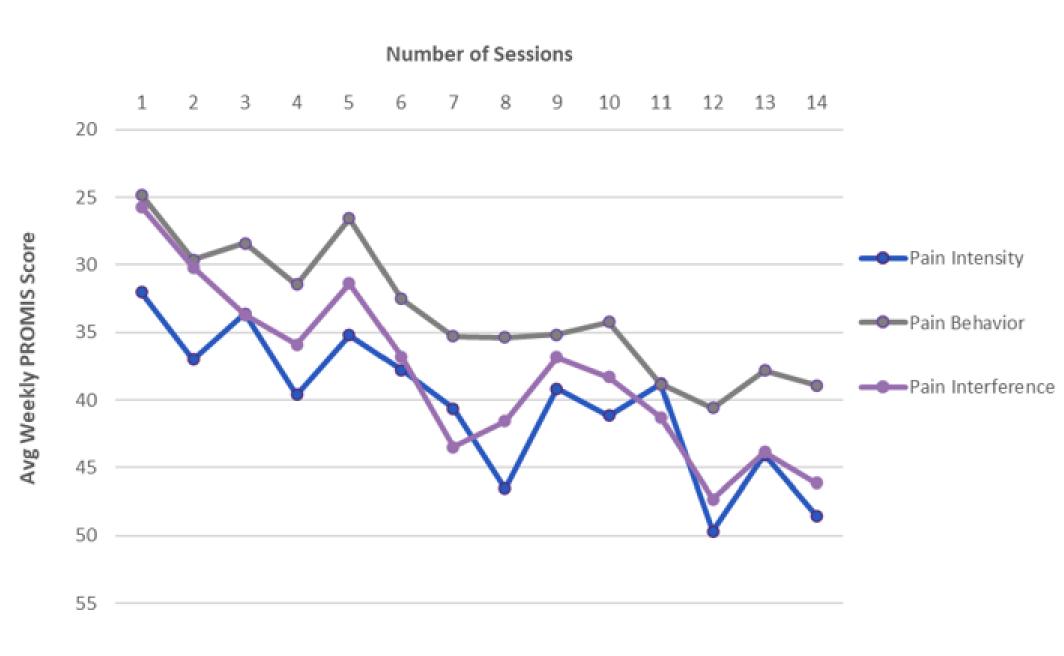
115%

Increase in sleep duration

Outcomes - PROMIS

Vx THERAPY

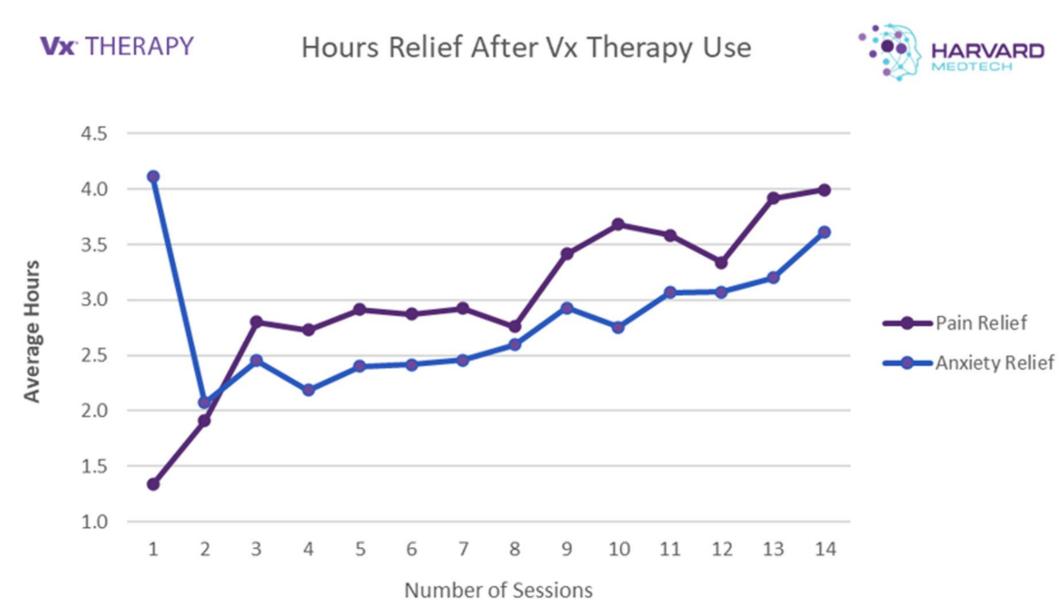
PROMIS Outcomes - Pain





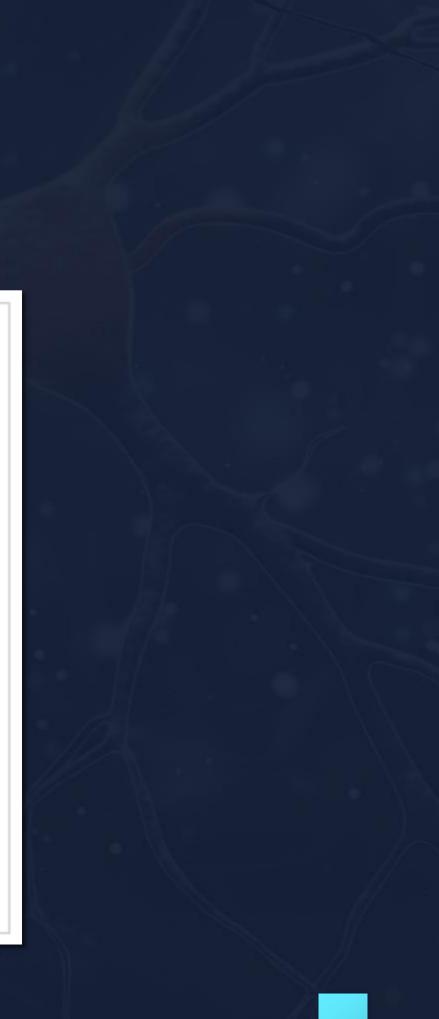


Outcomes – Legacy Pain





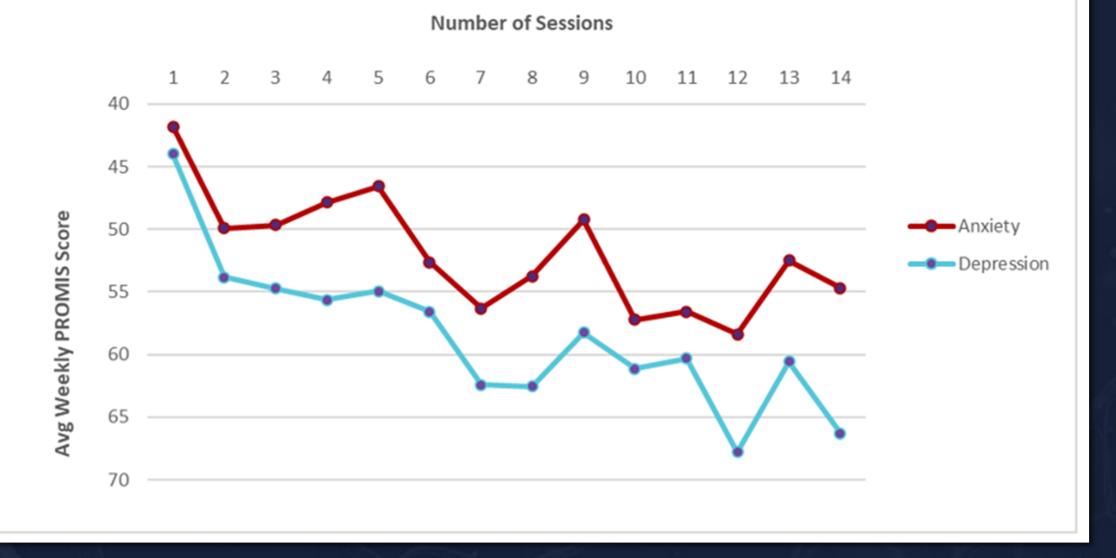




Outcomes – Depression/Anxiety

Vx[•] THERAPY

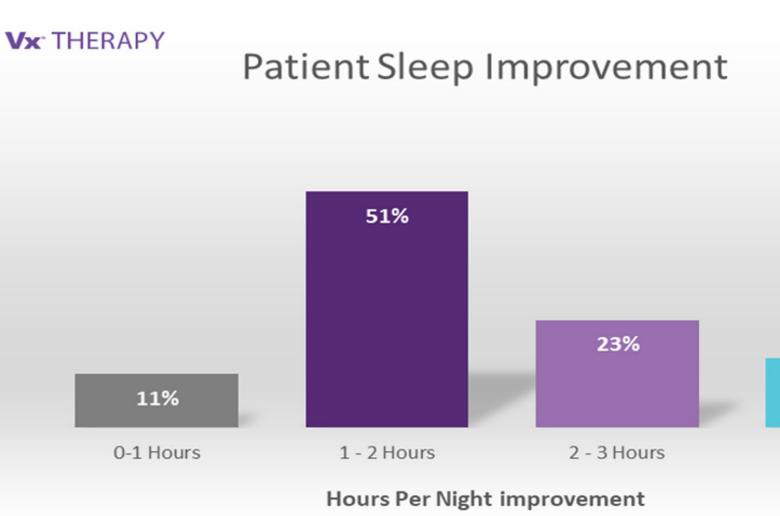
PROMIS Outcomes - Anxiety & Depression





Outcomes – Sleep





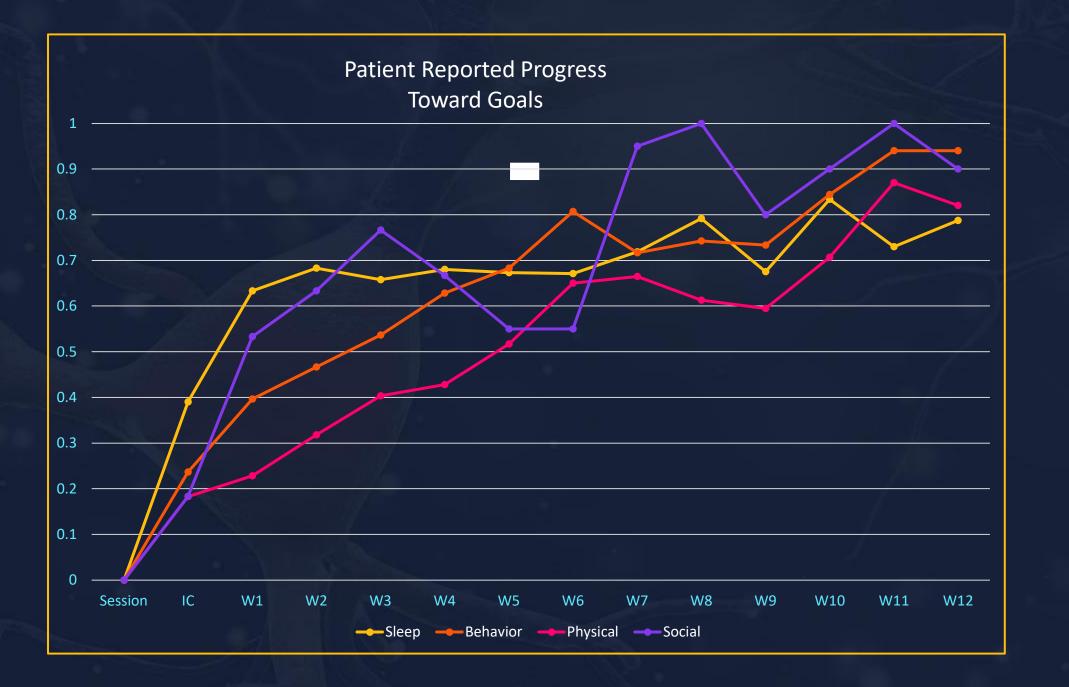
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3 -5 Hours

Better Patient Outcomes

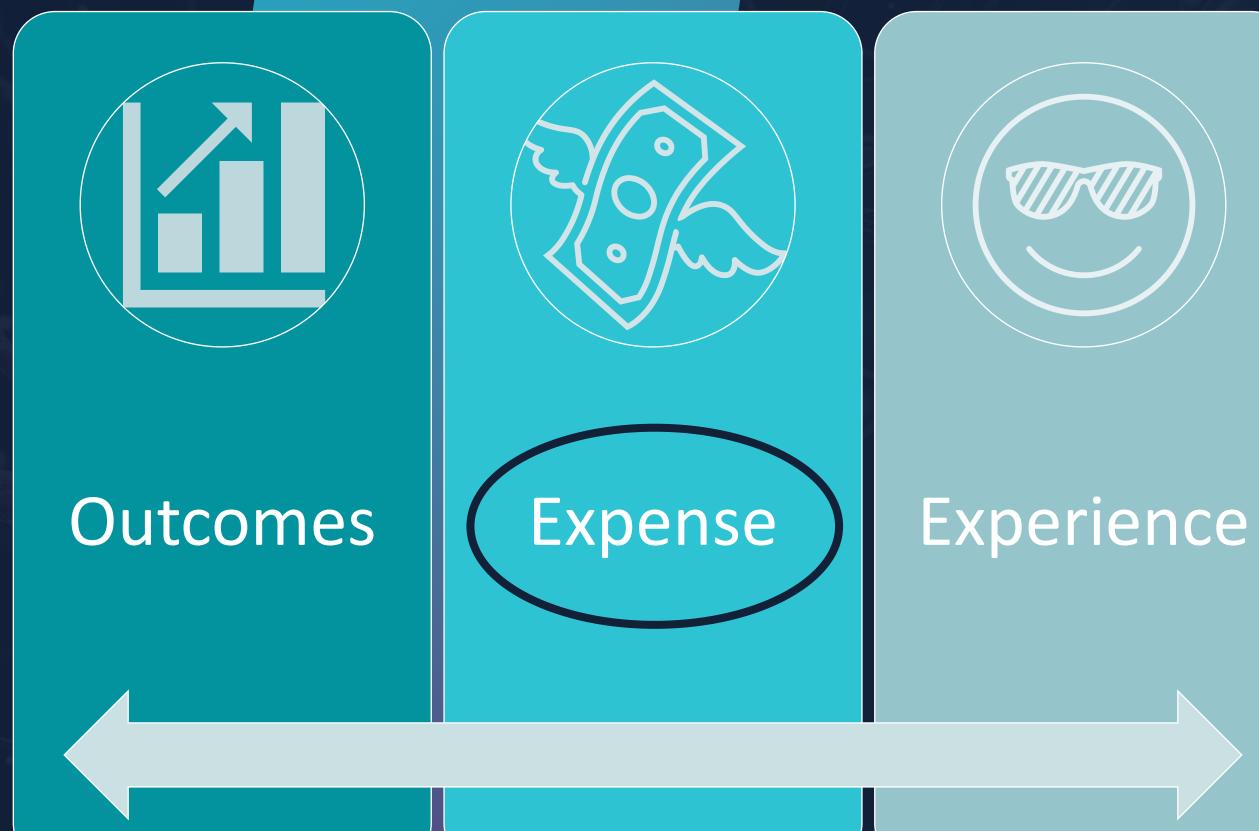


Patients experienced significant increases in sleep, behavioral, physical and social goals



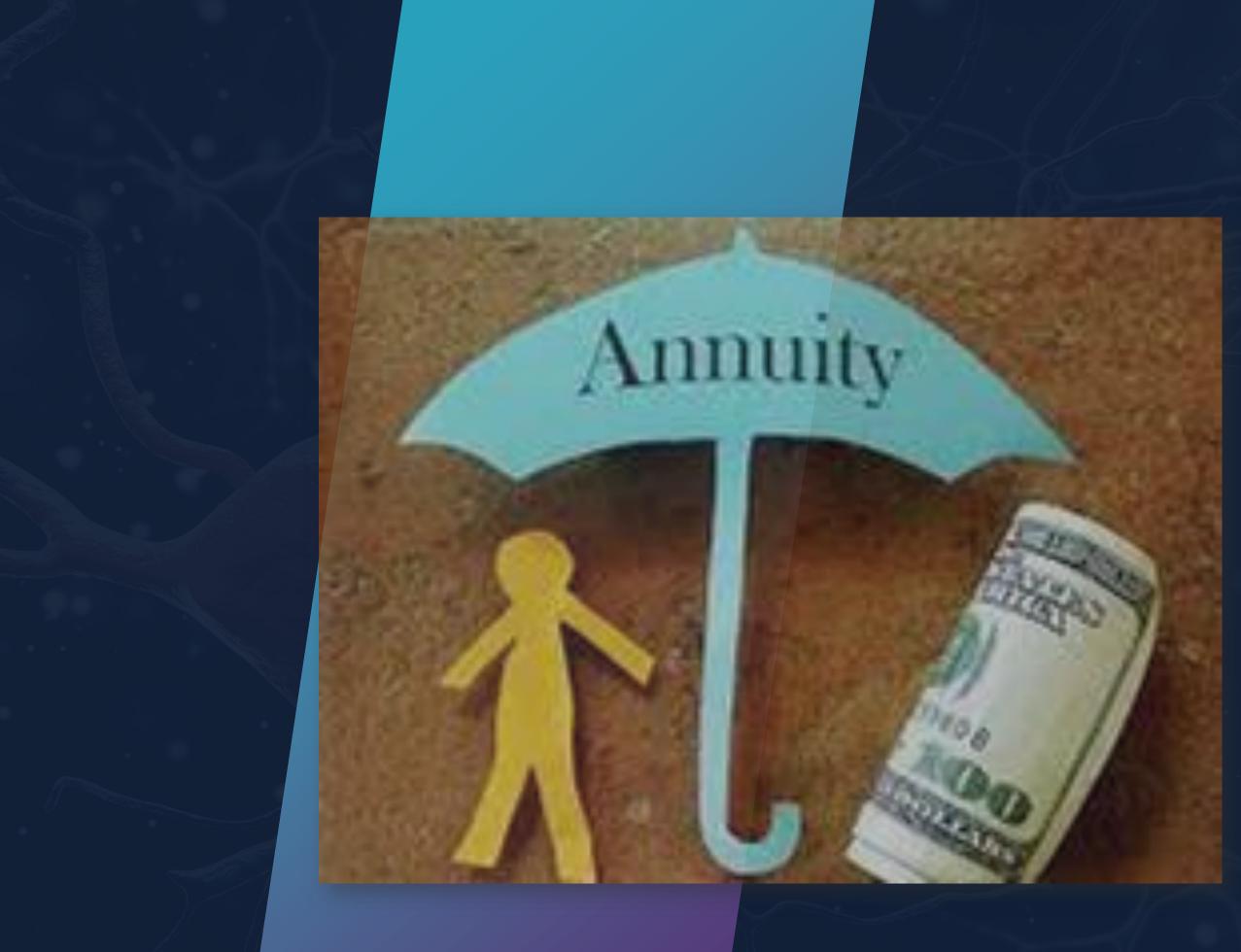
Patient's Self-reported Goals

- 102% increase in quality and duration of sleep
 - **297%** increase in behavior-based goals
 - **349%** increase in physical and mobility-based goals
- ✓ **390%** increase in social-based goals





WHAT IS OUR **L**?



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MEDICAL ANNUITES

From: @gdeb.com> Sent: Friday, September 17, 2021 7:47 AM To: Brenda Caldwell <<u>bcaldwell@harvardmedtech.com</u>> Subject: RE: Re-engage with HMT

Good Morning Brenda,

I do want to thank you so much for introducing the VX Therapy program to me. General Dynamic is a Self Insured Employer Group, all of our claims are Longshoremen's and Harbor Workers' Compensation. We have approved several of our employees for the program. As you are aware, it can be challenging to get employees to participate due to the Longshoremen's act. We can only suggest the program. For a Self Insured Employer Group, having a tool like the VX Therapy program to offer to our employees has been invaluable.

Here is what we have heard from our employees. I can do this from my home; The behavioral health clinician makes me feel comfortable and safe to express my feelings. When I sleep better, my pain seems to be less intense.

We had one of our employees who returned to full duties during the first eight weeks of the program. The treating physician indicated he would be out for at least six months, in wages, we saved at least \$18,000. Before starting the VX program, we paid \$102.000, and my team closed the file. This was a big win for General Dynamics Electric Boats, but more importantly, our employee is back to enjoying his everyday life. For a cost of \$6300, our ROI on this was in excess of 19:11

Thank you, and I hope to talk soon,

Thank you,

Electric Boat Corporation



WHAT PAYERS ARE Saying....

ROI = >19:1

\$102,000 -\$6,300

(HMT Cost)

(Usual Treatment Expense)

\$95,700

(Cost Savings)

@catholicmutual.org> From: Sent: Wednesday, October 14, 2020 8:37 AM To: Brenda Caldwell <bcaldwell@harvardmedtech.com> Subject: Wow!

Dear Brenda,

The Vx Pain Relief program worked extremely well for the above claimant. With this program, he achieved MMI for his low back on 9/29/20 with a permanent lifting restriction of 30 pounds (which is great), MMI for his knee on 10/13/20 with no restrictions whatsoever.

On his own, he found a new position and will begin this full time w/benefits job on 10/26/20 and is putting in his notice with the current employer who dropped him down to part-time (25 hours a week) and took away his health benefits back in June 2020.

I know I saved \$15,000.00 in voc rehab costs, a conservative \$37,570.00 in ongoing lost time benefits and at least \$50,000.00 in permanency (as he never got an attorney and we achieved MMI for both body parts). I have no idea how much I saved in medical but one year of pain management usually runs \$25,000.00 (drugs and injections as well as follow-up care, physical therapy, etc.).

I had try your program as I felt he would give it his best shot and according to the weekly reports and by his doctor, he did do exactly that.

All for the investment of \$6,300.00 (which by the way, in the State of Illinois that is the cost of 1 ESI).

Wow!

Needless to say, I will be keeping your company's services in mind for my claimant's in the future.

Warmest Regards,

Catholic Mutual Group | 16555 Weber Rd., Crest Hill IL 60403 W NY, LA, WI T С F @catholicmutual.org



Commitment. Expertise. Stability.



WHAT PAYERS ARE **SAYING**...

ROI = >20:1

\$133,870 -\$6,300

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(Usual Treatment Expense) (HMT Cost)

\$127,570

(Cost Savings)

From:

@CORVEL.com>

Sent: Wednesday, June 9, 2021 4:13 PM To: Brenda Caldwell <<u>bcaldwell@harvardmedtech.com</u>> Subject: Virtual Success!!

Brenda,

I wanted to take a moment to provide some feedback regarding your Vx Pain Relief program.

In this industry we have long searched for an alternative therapy method to provide our claimant's with relief of ongoing pain symptoms which cause their lives to be interrupted after a WC injury. With this program we have not only reduced medical exposure costs on claims but we have seen a few of our claimants "turn the corner" and be able to RTW in a full duty capacity and resume their preinjury lives. Additionally we have seen a reduction in narcotic prescription usage as well as reports from the claimants that speak to the positive impact in their lives that the Vr Program afforded them.

In one specific case we had a maintenance worker who sustained a TFCC injury of the right wrist. This of course was his dominant hand and it effected his ability to perform his normal job duties. This created ongoing lost time exposure for indemnity benefits on this claim as well as ongoing medical treatment for unresolved pain. After years of pain management treatment and injections with no measurable relief of symptoms we referred him to the Vr Program. This claimant's primary language is Spanish and this presented a bit of concern for us in how effective the program would be for him. Harvard MedTech ensured us that they would provide case management in Spanish to guarantee our claimant understood how the program worked and guided him through each step. I am delighted to report that at the completion of the Vr Program the claimant was able to perform his normal job duties at 100% and has not returned to pain management for care.

Prior to enrollment in the Vr Program this claim was costing \$6,227.28 a year in medical costs. In our state our governing statute allows lifetime medical benefits on WC claims. This claimant has an additional life expectancy of 36.9 years. This is equal to a savings of \$229,786.63 (\$6,227.28/year x 36.9 years) just in medical costs on this claim.

While there is a financial cost savings on this particular claim (ongoing indemnity and medical exposure) it goes beyond just the financial cost savings, the claimant got a pain free life back!

Thank you for always being willing to discuss claims, scenarios and options for our claimants, it has truly made the difference on more than just one of our claims.

Sincerely

CorVel Corporation | Baltimore P.O. Box 44015 | Baltimore, MD 21236-44015

@corvel.com | www.corvel.com

Please click on this link for further MCSIP information www.MCSIP.org

WHAT PAYERS ARE SAYING....

ROI = >35:1

\$229,787 -\$6,300

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(HMT Cost)

(Usual Treatment Expense)

\$223,487

(Cost Savings)

		Avg			
CPT	Chart Description	Claim	Ŭ	Change in	% Chng in
Codes	Short Description	Cost	w PshSo	Avg Cost	
27884	Amputation, leg, through tibia and fibula; secondary closure or scar revision	ŞZ35,540	\$679,124	\$443,584	188.3%
27886	Amputation, leg, through tibia and fibula; re-amputation	\$52,429	\$186,466	\$134,037	255.7%
27888	Amputation, ankle, through malleoli of tibia and fibula (e.g., Syme, Pirogoff type procedures), with	\$41,896	\$147,787	\$105,891	252.7%
27889	Ankle disarticulation	\$41,896	\$147,787	\$105,891	252.7%
28124	Partial excision (craterization, saucerization, sequestrectomy, or diaphysectomy) bone (eg, osteomye	\$78,917	\$278,941	\$200,024	253.5%
28126	Resection, partial or complete, phalangeal base, each toe	\$165,171	\$512,845	\$347,674	210.5%
28160	Hemiphalangectomy or interphalangeal joint excision, toe, proximal end of phalanx, each	\$165,171	\$512,845	\$347,674	210.5%
28800	Amputation, foot; midtarsal (e.g., Chopart type procedure)	\$36,439	\$123,378	\$86,939	238.6%
28805	Amputation, foot; transmetatarsal	\$36,439	\$123,378	\$86,939	238.6%
28810	Amputation, metatarsal, with toe, single	\$39,936	\$137,242	\$97,306	243.7%
28820	Amputation, toe; metatarsophalangeal joint	\$39,936	\$137,242	\$97,306	243.7%
28825	Amputation, toe; interphalangeal joint	\$39,936	\$137,242	\$97,306	243.7%



EXPENSE...

AMPUTATION

*Data from ODG by MCG

CPT Code	Short Description	Avg Claim Cost	Avg Claim w PshSo	Change in Avg Cost	% Chng in Cost
62325	Injection(S), Including Indwelling Catheter Placement, Continuous Infusion Or Intermittent Bolus, Of	\$53,288	\$178,023	\$124,735	234.1%
62326	Injection(S), Including Indwelling Catheter Placement, Continuous Infusion Or Intermittent Bolus, Of	\$53,288	\$178,023	\$124,735	234.1%
62327	Injection(S), Including Indwelling Catheter Placement, Continuous Infusion Or Intermittent Bolus, Of	\$53,288	\$178,023	\$124,735	234.1%
62350	Implantation, Revision Or Repositioning Of Tunneled Intrathecal Or Epidural Catheter, For Long-Term	\$29,866	\$100,164	\$70,298	235.4%
62351	Implantation, Revision Or Repositioning Of Tunneled Intrathecal Or Epidural Catheter, For Long-Term	\$29,866	\$100,164	\$70,298	235.4%
63650	Percutaneous Implantation Of Neurostimulator Electrode Array, Epidural	\$29,866	\$100,164	\$70,298	235.4%
63655	Laminectomy For Implantation Of Neurostimulator Electrodes, Plate/Paddle, Epidural	\$29,866	\$100,164	\$70,298	235.4%
63663	Revision including replacement, when performed, of spinal neurostimulator electrode percutaneous arr	\$53,251	\$179,624	\$126,373	237.3%
63664	Revision including replacement, when performed, of spinal neurostimulator electrode plate/paddle(s)	\$53,251	\$179,624	\$126,373	237.3%
63685	Insertion Or Replacement Of Spinal Neurostimulator Pulse Generator Or Receiver, Direct Or Inductive	\$29,866	\$100,164	\$70,298	235.4%
64451	Injection(s), anesthetic agent(s) and/or steroid; nerves innervating the sacroiliac joint, with imag	\$23,671	\$78,830	\$55,159	233.0%
64479	Injection, Anesthetic Agent And/Or Steroid, Transforaminal Epidural, With Imaging Guidance (Fluorosc	\$53,251	\$179,624	\$126,373	237.3%
64480	Injection, Anesthetic Agent And/Or Steroid, Transforaminal Epidural, With Imaging Guidance (Fluorosc	\$53,251	\$179,624	\$126,373	237.3%
64483	Injection, Anesthetic Agent And/Or Steroid, Transforaminal Epidural, With Imaging Guidance (Fluorosc	\$53,251	\$179,624	\$126,373	237.3%



EXPENSE...

INTERVENTIONAL PAIN

*Data from ODG by MCG

CPT Codes	Short Description	Avg Claim Cost	Avg Claim w PshSo	Change in Avg Cost	% Chng in Cost
22630	Arthrodesis, posterior interbody technique, including laminectomy and/or discectomy to prepare inter	\$53,251	\$179,624	\$126,373	237.3%
22633	Arthrodesis, combined posterior or posterolateral technique with posterior interbody technique inclu	\$53,381	\$178,116	\$124,735	233.7%
22800	Arthrodesis, posterior, for spinal deformity, with or without cast; up to 6 vertebral segments	\$32,782	\$108,264	\$75,482	230.3%
22802	Arthrodesis, posterior, for spinal deformity, with or without cast; 7 to 12 vertebral segments	\$87,189	\$310,252	\$223,063	255.8%
22804	Arthrodesis, posterior, for spinal deformity, with or without cast; 13 or more vertebral segments	\$87,189	\$310,252	\$223,063	255.8%
22808	Arthrodesis, anterior, for spinal deformity, with or without cast; 2 to 3 vertebral segments	\$87,189	\$310,252	\$223,063	255.8%
22810	Arthrodesis, anterior, for spinal deformity, with or without cast; 4 to 7 vertebral segments	\$87,189	\$310,252	\$223,063	255.8%
22812	Arthrodesis, anterior, for spinal deformity, with or without cast; 8 or more vertebral segments	\$87,189	\$310,252	\$223,063	255.8%
27280	Arthrodesis, open, sacroiliac joint, including obtaining bone graft, including instrumentation, when	\$32,782	\$108,264	\$75,482	230.3%



EXPENSE...

SINGLE LEVEL FUSION

*Data from ODG by MCG





Outcomes

Expense





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WHAT IS OUR L?





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EXPERIENCE

NET PROMOTOR SCORE

INITIAL: 7.8 Graduation: 9.3

INNOVATION & ACHIEVING THE TRIPLE AIM

Cost
Reduction/Avoidance

• ROI vs VOI

 Improved Clinical Outcomes Improved Patient Experience

Return to Work



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Whole Person Care

) ork

60

CURRENT CLINICAL USE CASES

- Vx Assisted Medication Tapering
 - Coordination with a treating physician to lower Schedule II drug use
- Amputations
 - ✓ Facilitate acute recovery while minimizing the risk of phantom limb syndromes

Pandemic Related Clinician Fatigue

- ✓ Helping nurses and healthcare professionals deal with the ongoing stress of COVID
- Commercial Violence/PTSD
 - ✓ Helping deal with daily robberies at a large national pharmacy chain

Behavioral Health Support

✓ Filling a gap for difficult service areas



✓ Use prior to being referred to a spine surgeon

Hospice & Cancer

✓ Support for the patient and caregivers





Surgical Avoidance





Vx[®] THERAPY



Technology with a human touch

Harvard MedTech Featured Publications

<u>AM Best TV | Pandemic Accelerated Use of Telemedicine in Workers' Comp</u> at RIMS 2022 – 4/13/22 Video

<u>Risk & Insurance | Potentially Problematic Products Pharmacy Benefit Managers Are Monitoring</u> by Nina Luckman

Pain and Therapy | Combining Virtual Reality and Behavioral Health to Promote Pain Resiliency by Alaa Abd-Elsayed; Nasir Hussain; Gerry Stanley, MD

<u>Physicians Practice | Delighting Payers and Patients with Turn-Key Behavioral Health Solutions</u> by Gerry Stanley, MD

<u>CMSA Today | Treating the Emotional and Physical Trauma Associated with Pain</u> by Gerry Stanley, MD

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by Gregory DL Morris

WorkersCompensation.com | Innovation Equation for Pain

by Gerry Stanley, MD; Mark Pew

<u>AHN | Allegheny Health Network Improves Cancer Patients Experience and Comfort with</u> Harvard MedTech Virtual Reality Technology

by Allegheny Health Network (AHN) Press Release

Business Wire | Harvard MedTech to Discuss New Approaches to Pain Management for Injured Workers

by Business Wire Press Release

<u>Risk & Insurance | Can Virtual Reality Really Help Injured Workers with Pain PTSD and Other</u> <u>Conditions</u>

by Courtney DuChene

<u>MCOL Blog | Scaling the Mountain of Pain Management: Why Virtual Reality is the New</u> <u>Pathway</u>

by Gerry Stanley, MD

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Vx® Therapy in the Literature

Insurance Thought Leadership | A Biopsychosocial Approach to Recovery by Marcos Iglesias

Ascellus | Early CBT Intervention Changes Lives, Saves Money for WC Payers by Michael Coupland

<u>JMIR Publications | Self-Administered Skills-Based Virtual Reality Intervention for Chronic</u> <u>Pain</u>

by Beth D. Darnall, et al

Forbes Article / Virtual Reality Emerging as Effective Pain Management Tool by Marla Milling

JAMA Psychiatry | Effect of Pain Reprocessing Therapy vs Placebo and Usual Care for Patients with Chronic Back Pain

by Yoni K. Ashar, PhD; Alan Gordon, LCSW; Howard Schubiner, MD; et al

<u>Washington Post | Chronic Pain is Surprisingly Treatable - When Patients Focus on the Brain</u> by Nathaniel Frank

Springer Link | Virtual Reality as a Clinical Tool for Pain Management by Ali Pourmand et al

<u>TMRI | Virtual Reality to Relieve Pain in Burn Patients Undergoing Imaging and Treatment</u> by Mohammed S. Bermo, MD, et al

<u>JAAOS | Psychological Effects of Musculoskeletal</u> by Kevin K. Kang, MD; Matthew L. Ciminero, MD; Joshua A. Parry, MD; et al

Orthopaedic Forum | Mental and Social Health are Inseparable from Physical Health

by David Ring, MD, PhD

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REFERENCES



BIBLIOGRAPHY AND ADDITIONAL REFERENCES WILL ARE AVAILABLE UPON REQUEST

ODG & ACOEM CRITERIA



VIRTUAL REALITY

- PTSD
- Anxiety
- Multidisciplinary interventions for pain, chronic and acute
- Distractive methods for acute pain • and stress reduction



BEHAVIORAL THERAPY

- Biopsychosocial model of Chronic • pain
- Behavioral interventions (CBT) for 7-• 20 weeks
- Cognitive therapy for opioid • dependence
- Cognitive therapy for anxiety, depression or PTSD
- Computer assisted therapies •





CLASS I FDA CLEARED MEDICAL DEVICE