



Welfare



Industry



Research



Pets



Quantifying pain to lead the path to wellness

“

During my examination, PainTrace® detected and reported neck pain but the dog showed no clinical sign of pain. A subsequent MRI confirmed the presence of a cervical spine tumor. PainTrace was right!”

MICHAEL PETTY
DVM, MAV, CCRT, CVPP, DAAPM



Pain is a complex, multi-dimensional experience with sensory and affective elements. All mammals process the neuroanatomic and neuropharmacologic components involved in transduction, transmission of noxious stimuli...



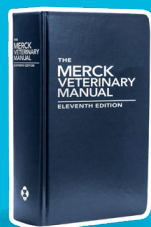
All current methods used to measure pain in animals are prone to errors of over/under reporting.



Pain assessment must be able to distinguish individual sensitivities.



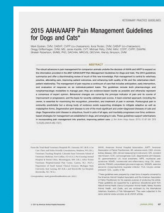
Most pain scales rely on recognition and interpretation of behaviors.



ADAPTED
MERCK VETERINARY MANUAL



Pain assessment, should be a routine component of every physical examination, and a pain score is considered the "fourth vital sign," after temperature, pulse, and respiration.



2015 AAHA/AAFP PAIN
MANAGEMENT GUIDELINES
FOR DOGS AND CATS

How do you know? **PainTrace®.**

DETECT

PainTrace offers qualitative and quantitative monitoring of acute and chronic pain in multiple species including canine, feline, equine, livestock, and humans.

Veterinarians and researchers now have an objective instrument to aid diagnosis and treatment success.

QUANTIFY

PainTrace differentiates acute and chronic pain measuring both magnitude and duration.

Understanding the individual experience of pain supports targeted treatment leading the path to wellness.



TRACK

Speech recognition timestamp annotates your examination, charting location and degree of pain.

Overlay pre and post treatment PainTraces.

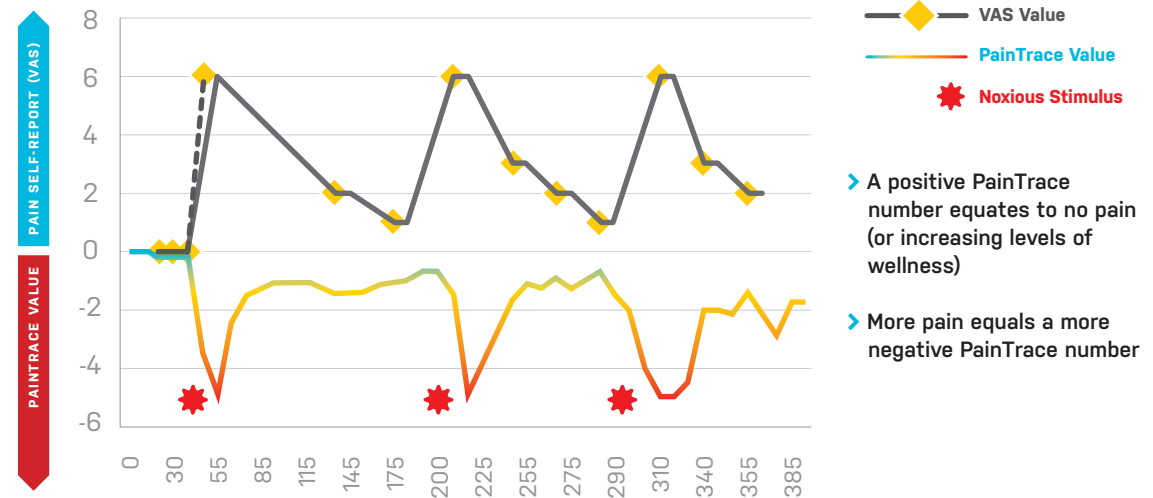
Custom software allows for client visualization of pain.

Analyze the success of your intervention: osteoarthritis, surgery, rehab, cancer & pain



PainTrace® uses patented BioTraceIT™ technology that detects, quantifies and tracks pain. We're revolutionizing pain management for people and animals.

BioTraceIT™ offers a wearable monitor that quantifies both acute and chronic pain. Real-time pain levels are acquired using skin-mounted sensors that process a direct pain biosignal generated by the nervous system – much like an ECG. Research in canine, equine, and human patients has proven the ability of PainTrace® to quantify pain. Prep to PainTrace in 5 minutes.

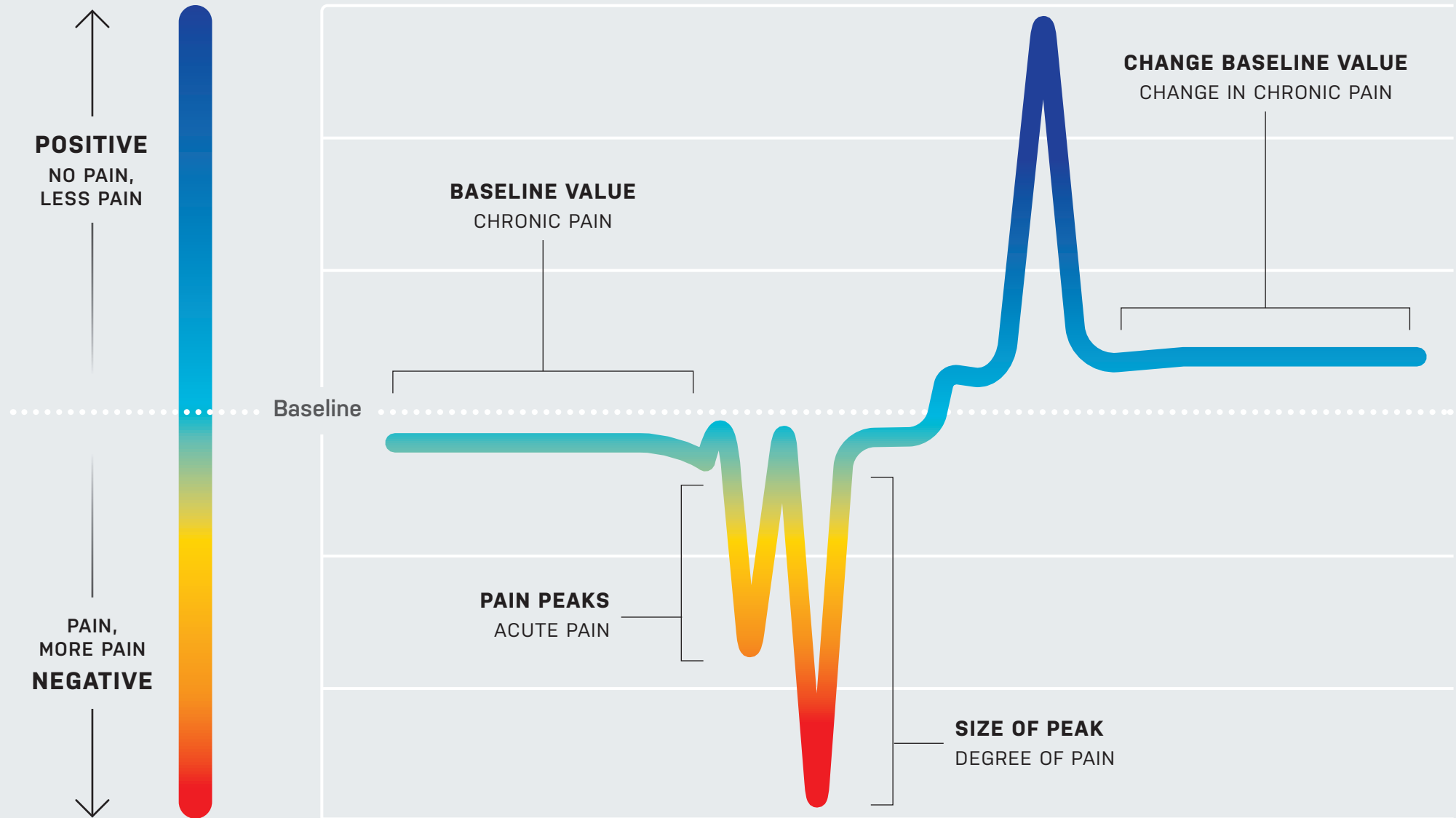
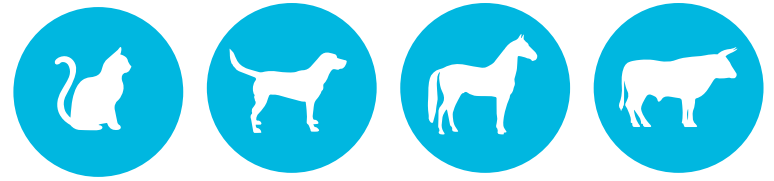


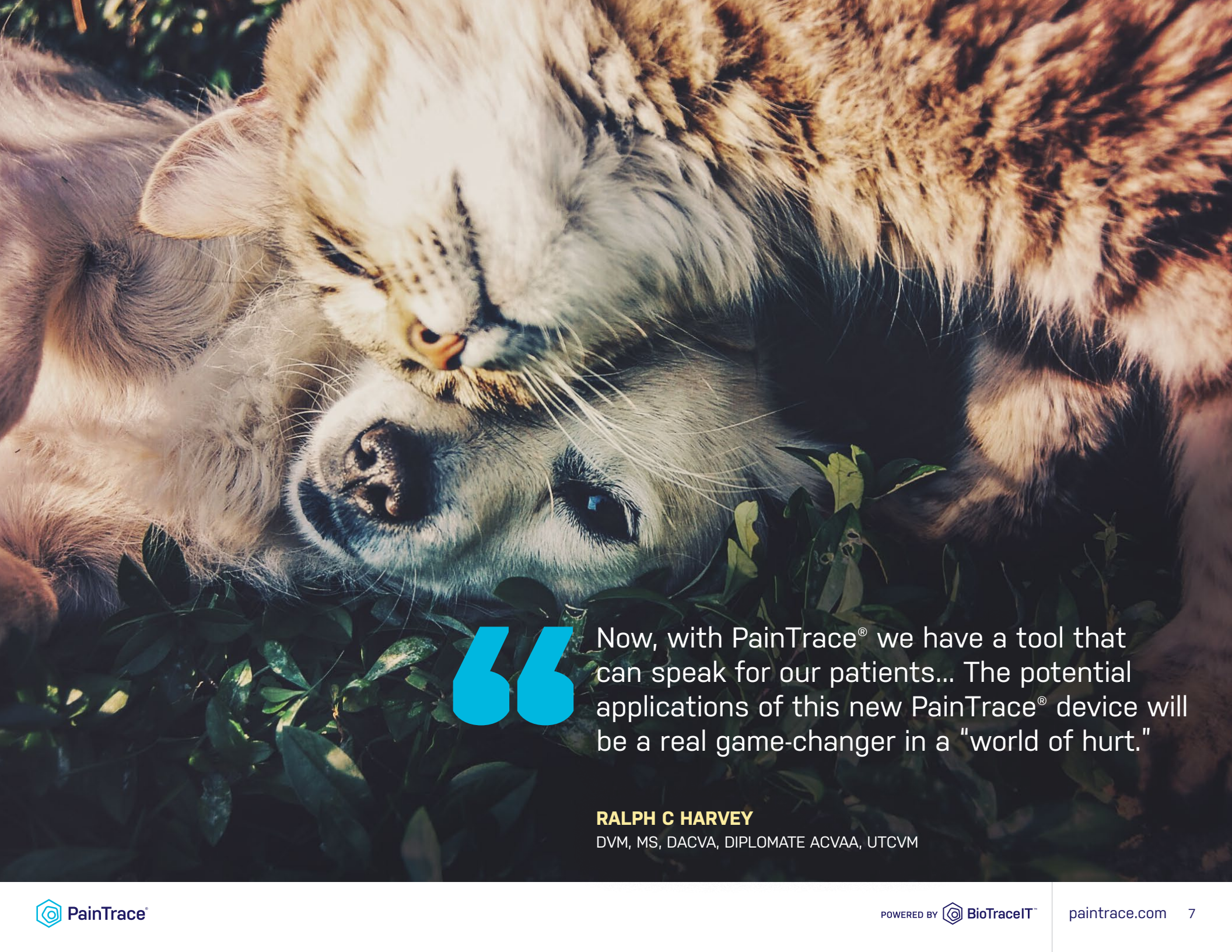
SELF-REPORTED PAIN (BLUE) VS. PAINTRACE® BIOSIGNAL (RED) IN AXILLARY NERVE INJURY

The figure above shows the correlation of self-reported VAS (Visual Analog Scale), commonly employed in human studies, compared to the PainTrace biosignal. VAS Self-report is graphed in gray and PainTrace® (PT) values are graphed in a gradient, where mild pain is yellow, moderate pain in orange, and severe pain is red. A noxious stimulus was introduced, aggravating the axillary nerve injury, at 45, 200, and 290 seconds. PainTrace levels recorded during the repeated noxious stimuli correlated with the self-report at time of stimulus.

Note: The VAS equal to 6 at 45 seconds was not recorded and was added for graphing purposes. All recorded VAS are denoted by the yellow diamond markers.

PainTrace® Pain Scale





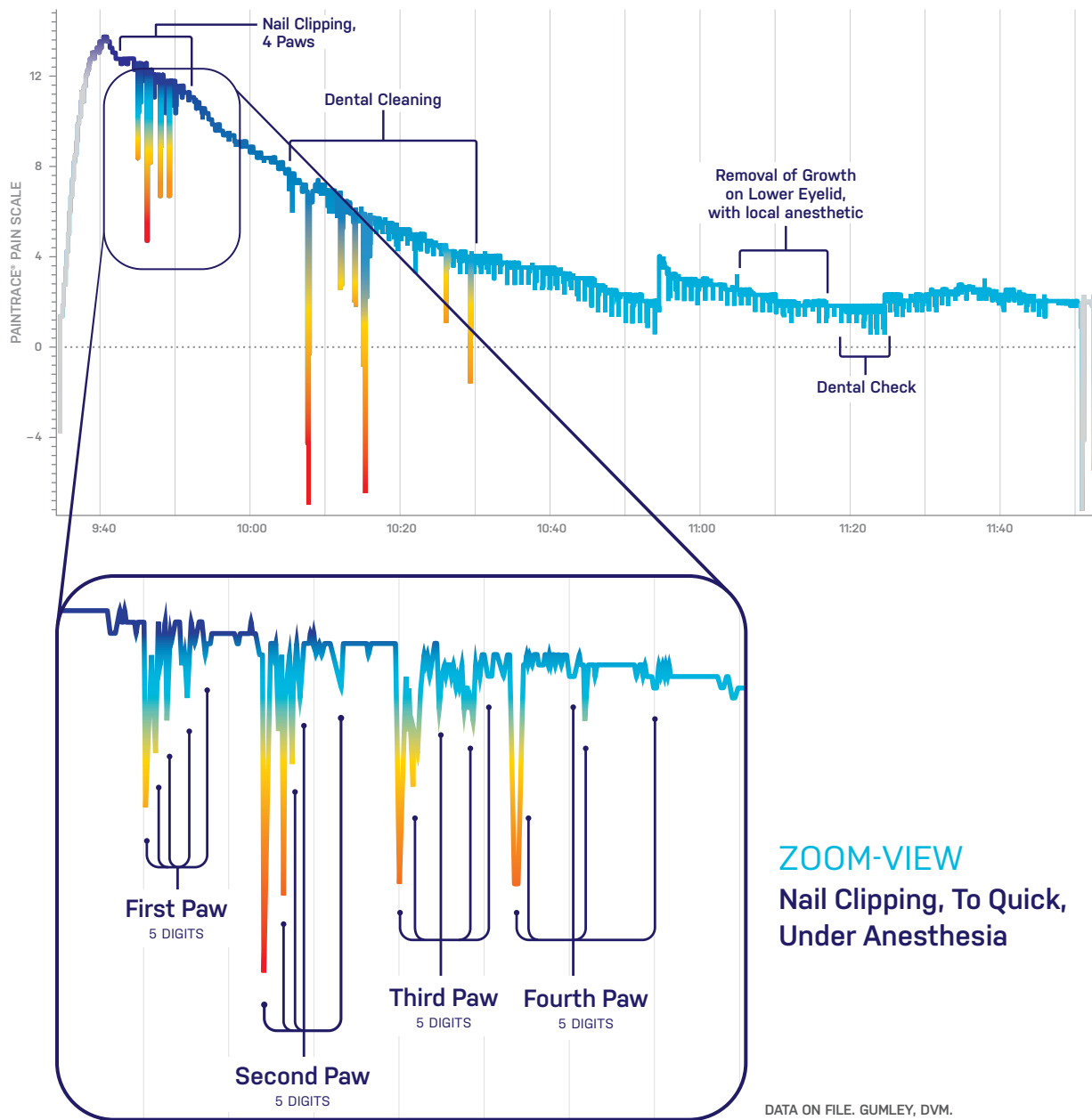
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Now, with PainTrace® we have a tool that can speak for our patients... The potential applications of this new PainTrace® device will be a real game-changer in a "world of hurt."

RALPH C HARVEY

DVM, MS, DACVA, DIPLOMATE ACVAA, UTCVM

Acute Pain: Nail Clipping



ZOOM-VIEW Nail Clipping, To Quick, Under Anesthesia

DATA ON FILE. GUMLEY, DVM.



Pain during Dental Cleaning and Nail Clipping, to Quick, under Anesthesia

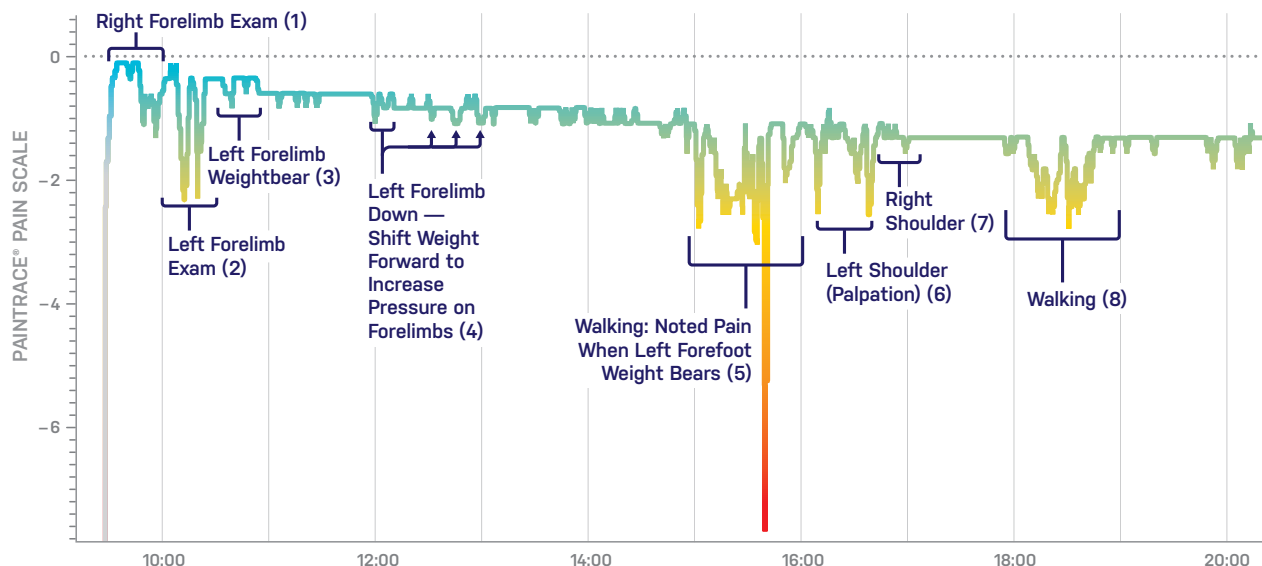
CANINE

Dog was placed under anesthesia for dental cleaning and removal of growth on the lower eyelid. During anesthesia an aggressive nail clipping was also undertaken due to the dog's resistance to nail clipping while awake.

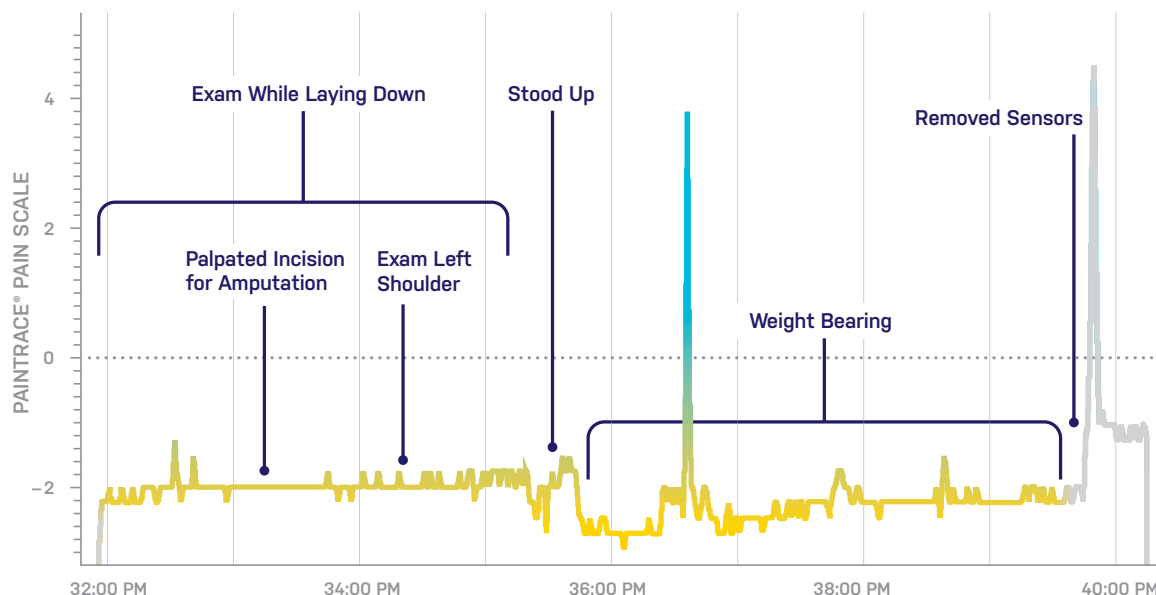
The following describes the PainTrace® data below and the associated procedure under anesthesia:

- Nail clipping on all four paws; pain experienced based on negative deflection (zoom-view of all four paws in second data set to the left)
- Dental cleaning; pain experienced based on negative deflection
 - Dental pain rivals intense neuralgia due to high density of nerves
- Removal of growth from lower lid from incision to sutured closure; no pain detected; using local anesthetic
- Veterinary checked dental probing gums, scalpel irritation at end of check detected

Initial Examination



5 Day Post Op Examination



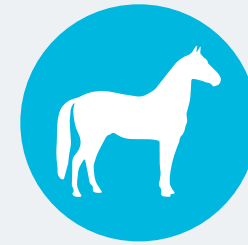
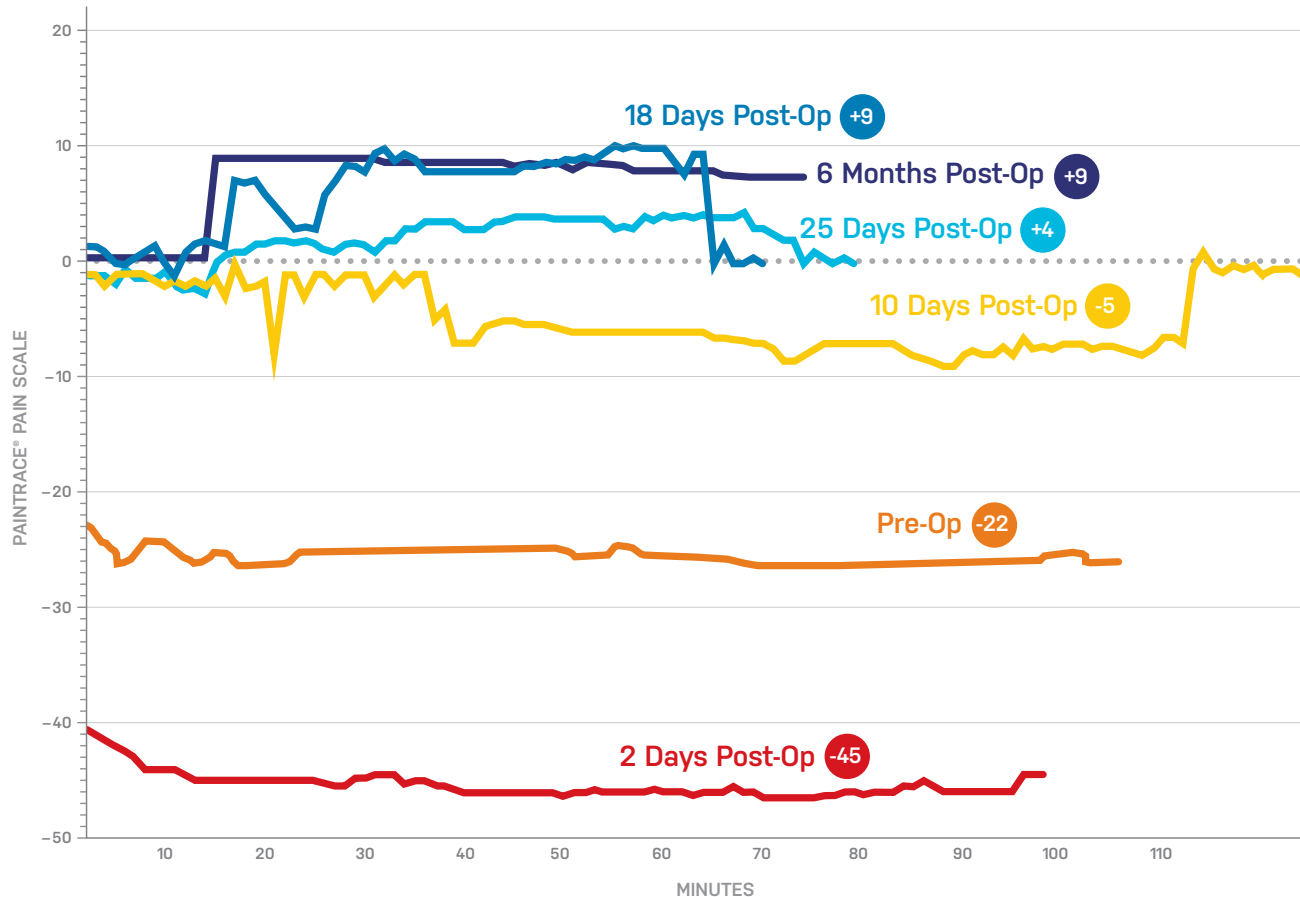
Left Forelimb Pain During Veterinary Examination of 5th Digit Non-union

CANINE

A 6 y.o., 33 kg, greyhound presented with inflamed digit of left forelimb. Dog was found to be non-responsive to the veterinary exam, and appeared to be masking pain. PainTrace® was utilized and it became evident pain was experienced upon weight bearing on the affected left foot. Subsequent radiographs confirmed fracture non-union.

The dog returned for a follow-up visit five (5) days post-op amputation 5th digit with fracture non-union in affected left forelimb. Pain was managed with 300 mg Gabapentin (~10 mg/kg) TID, 30 mg codeine (~1 mg/kg) q4h, and meloxicam (~0.1 mg/kg). From the PainTrace® signal, the post-op follow-up appears to represent managed acute pain based on the absence of any significant negative PainTrace® signal deflections. The overall PainTrace® baseline is more negative potentially denoting an increased overall, or chronic, mild pain level. Veterinary exam also confirmed the absence of acute pain.

Pre-Op & Post-Op Pain Measurements



Post-surgical Pain Monitoring over Months

EQUINE

The following data represents a 15 year old horse with laminitis. To alleviate pain the nerves were resected to the affected limb. Pre-surgical pain was measured and the pain levels were monitored post-surgically for six months.

- You can see pre-op pain levels were -22
- 2 days post-op a -45 pain level reflects more pain potentially from the chronic pain plus surgical pain
- 10 days post-op the horse is recovering at a -5 reflecting less pain than pre-operative pain levels
- 18 days post-op no pain at +9. Any positive number reflects the absence of pain. The more positive the number the greater the level of "wellness"
- 25 days post-op +4 at the end of the first day out of the stall; some fatigue is registered
- 6 months post-op +9. A PainTrace® reading of +9 was the average reading for this horse post-surgically

“

In 39 years of training thoroughbreds this is the only thing I have seen that can accurately detect both pain and pain relief in a horse. I do not like to race any horse in pain and it is often hard to tell with minor injuries. BioTraceIT™'s device removes the guesswork and even lets you follow the animal's recovery with a simple, inexpensive procedure that anyone can administer in a few minutes.

DON COMBS

KENTUCKY DERBY-WINNING TRAINER

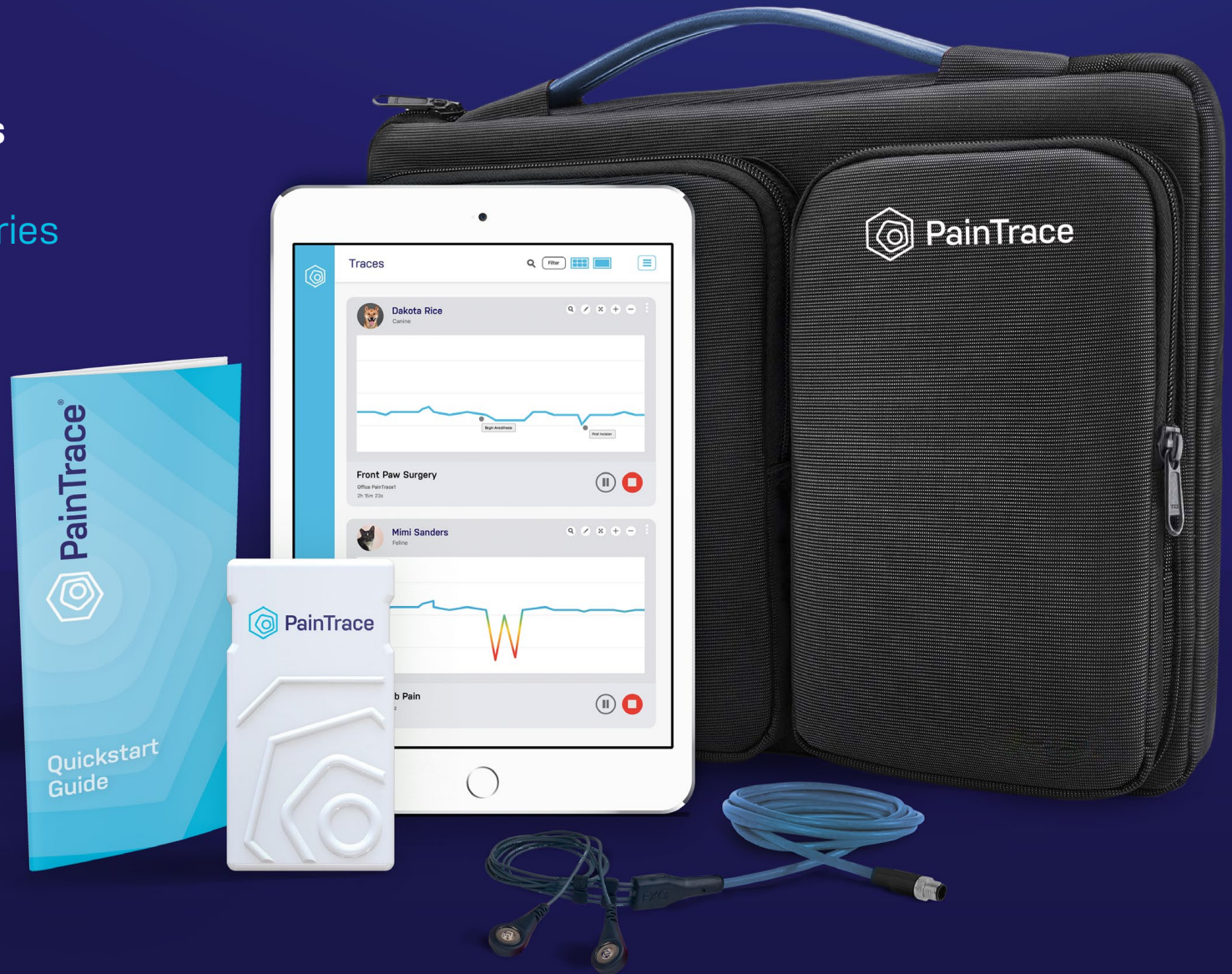


Each PainTrace® Kit Contains

- › PainTrace device(s)
- › Sensors & Sensor cable
- › iPad
- › Carrying case
- › Charging supplies

PainTrace Accessories

- › Harness
- › CloudLeash™
- › Neck wrap





Software Features



Online/Offline Full Data Sync

Seamless work in non-Wi-Fi areas including operating rooms and barns

Automatic data upload upon Wi-Fi connection



256-bit AES Data Encryption



Bluetooth 5.0 Low Energy

Up to 5 device integration per iPad

"Roving iPad" feature and extended range 500' indoor and 0.5 mile/0.8 km outdoor connectivity

Take iPad from room to room to "scroll and connect" with patients in surgical recovery or barn/stable setting

"Check-in" on nearby animals in the pen in barn/stable setting



UI and Analytics

Graph and track mild, moderate and severe pain

Visualize pain by anatomy and track pain over time to evaluate treatment effectiveness

Show patients and pet owners



Speech to Text Notes

Capture anatomy, tests, and diagnoses — all time-stamped on the PainTrace®



Telemedicine Compatible

Cloud-based, remote data access, analytics backbone

Hardware Features



Battery Performance

5 days of continuous pain monitoring

Fully charged in 3 hours



Water Resistant

Performs in wet environments like a shower, not swimming



Offline Data Access

10 months of SD data storage

Industrial grade SD card for increased durability for large animals



Multiple Biosignal Monitor

Monitor pain and activity



Wake-up On Motion

Activity tracker detects motion and activates PainTrace® data acquisition from sleep mode



Smart Button

Controls hardware and data acquisition mode directly from the device without the software



Impact Resistant

Molded Enclosure protects the device

DETECT

- › Where does it hurt?
- › How much does it hurt?
- › Subclinical pain
- › Acute and chronic
- › Localize pain

QUANTIFY

- › Measure intervention outcome
- › NSAID
- › Opioid
- › Anxiolytic
- › Laser
- › Acupuncture

TRACK

- › Monitor patient healing
- › Support patient compliance
- › Year on year wellness
- › Early detection



**PainTrace® elevates
the standard of care
while generating
substantial hospital
operating profit.**

Engage clients by visualizing your diagnosis with PainTrace.

- › Show clients the pain
- › Decide to test and treat
- › Optimize interventions

PainTrace drives secondary revenue

- › Improved pharmacy revenue
- › Improved client opt-in for surgery, rehabilitation, etc



Quantifying pain
to lead the
path to wellness

Joseph P. Thompson
**MUSCULOSKELETAL THERAPIES
FOR ANIMALS**

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Contact me to complete our
operating profit calculator.

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