European Society of
Regional Anaesthesia
& Pain Therapy
ESRA ITALIA

ESRA Italian Chapter

XXVIII CONGRESSO NAZIONALE

PRESIDENTE
DEL CONGRESSO
Luciano Calderone

Erik Roman-Pognuz Md, PhD

UNIVERSITÀ DEGLI STUDI DI TRIESTE

MZ EVENTS

BARCOLANA 55

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How to improve pain management quality and save costs with modern technologies, for In-hospital settings.

Erik Roman-Pognuz Md, PhD

UNIVERSITÀ
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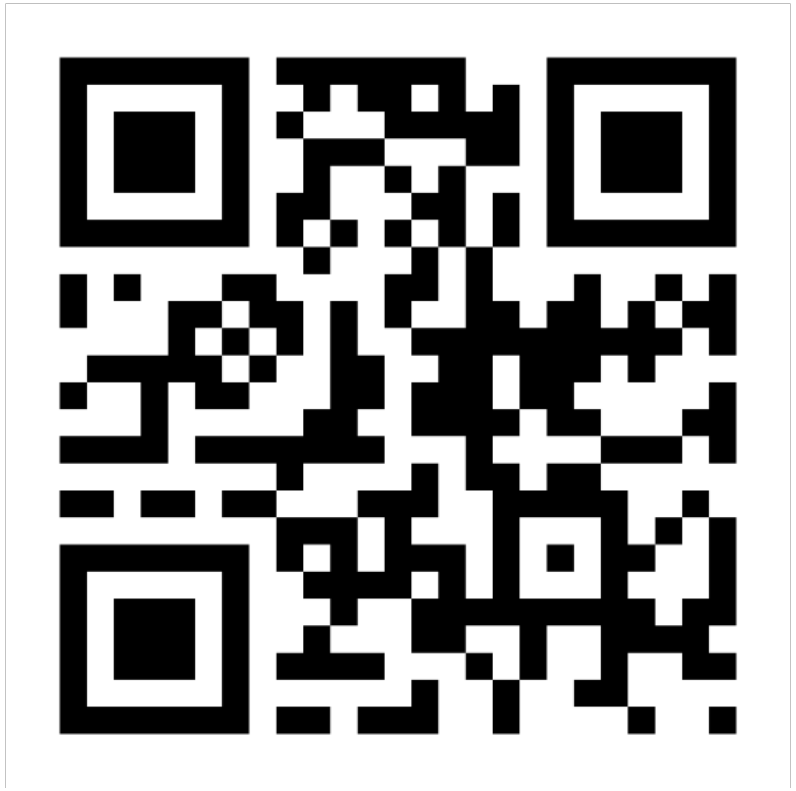
Straw poll

How many of you use AI in the hospital?



https://directpoll.com/r?XDbzPBd3ixYqg8MrBge0azQ1MKXCitRxkCq3S8S9

Clinical outcome of ill patients

limitations

complexity of acuity
individual heterogeneity
early treatment strategies
anticipating deterioration

advanced systems represent the next step in improving bedside care?

Data : vast, abundant and complex

AI simplifies analysis making accessible

Clinical investigations are increasingly utilizing AI-driven models

AI's potential in critical care is still in its infancy

Can AI also reduce errors in medicine?

thebmj

BMJ 2016;353:i2139 doi: 10.1136/bmj.i2139 (Published 3 May 2016)

- Estimated 200,000 - 400,000 deaths a year
- ~ 60-120 per 100,000 head of population
- 5-10 times the death from car accidents

ANALYSIS

CrossMark
click for updates

Medical error—the third leading cause of death in the US

WHITE PAPER

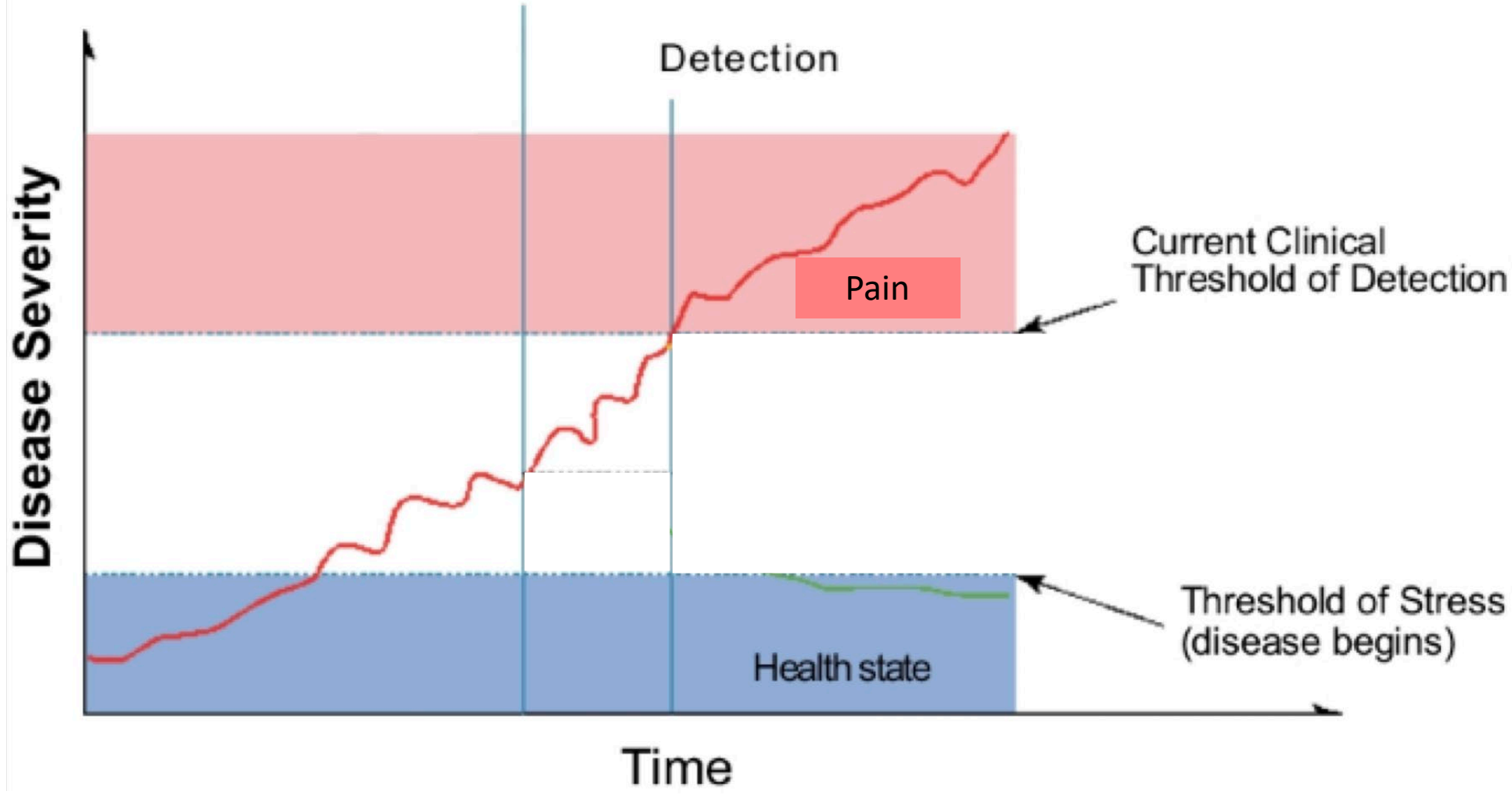
PINNACLECARE
HEALTHCARE CHALLENGES SOLVED

The Human Cost and Financial Impact of Misdiagnosis

KEY MESSAGES

- Most Americans will experience a diagnostic error at least once in their lifetime.
- Patient deaths due to these errors are estimated at 40,000 to 80,000 per year.
- Diagnostic errors and other inefficiencies cost the U.S. economy $750 billion each year.

Conceptual role of (AI)-driven predictive analytics on disease progression.



Yoon *et al. Critical Care (2022)*

Conceptual role of (AI)-driven predictive analytics on disease progression.

EJA European Journal of Anaesthesiology

Articles & Issues | Collections | Guidelines | Podcasts | For Authors | Journal Info

40% of orthopedic of patients still experience moderate to severe postoperative pain.

PAIN

Outline

Images

Chronic postsurgical pain in Europe

An observational study

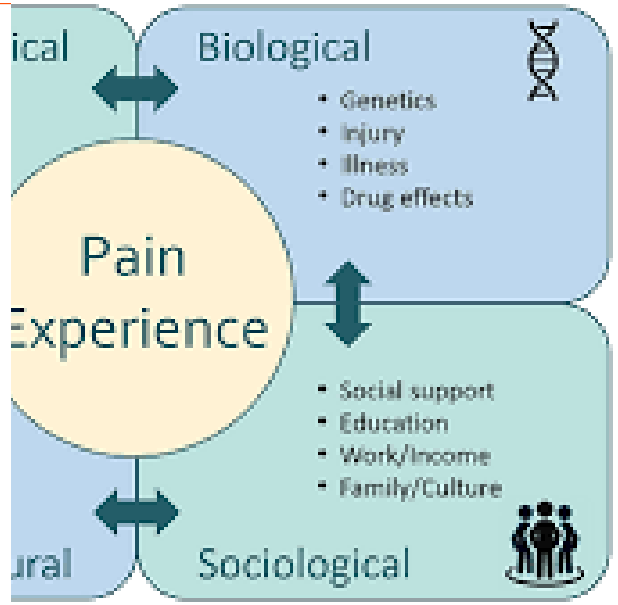
Fletcher, Dominique*; Stamer, Ulrike M.*; Pogatzki-Zahn, Esther; Zaslansky, Ruth; Tanase, Narcis

Anaesthesia
Peri-operative medicine, critical care and pain
Association of Anaesthetists

Editorial | Free Access

Using postoperative pain trajectories to define the role of regional analgesia in personalised pain medicine

30% excessive numbness or motor blockade which brings to significant limitation of activity



ELSEVIER

Journal of Clinical Anesthesia

Volume 77, May 2022, 110618

Original Contribution

Remote transmission monitoring for postoperative perineural analgesia after major orthopedic surgery: A multicenter, randomized, parallel-group, controlled trial

Xavier Capdevila MD, PhD [a b], Philippe Macaire MD [c], Nathalie Bernard MD [a],

80 pz in orthopedic surgery

Randomly assigned (RT vs BC group)

Results:

- RT, faster response time to PCA adjust (20 min) vs BCgroup (55 min)
- lower ropivacaine usage
- reduced nurse workload and costs

No differences were noted in satisfaction scores or complication rates.

BJA

British Journal of Anaesthesia, 129 (3): 435–444 (2022)

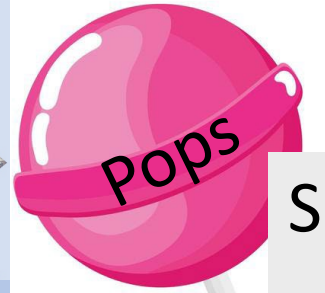
doi: 10.1016/j.bja.2022.05.039
Advance Access Publication Date: 7 July 2022
Regional Anaesthesia

Comparison of continuous with single-injection regional analgesia on patient experience after ambulatory orthopaedic surgery: a randomised multicentre trial

Axel Maurice-Szamburski[1,*], Philippe Grillo[1], Philippe Cuvillon[2], Thierry Gazeau[3], Laurent Delaunay[4], Pascal Auquier[5], Sophie Bringuier[7] and Xavier Capdevila[6]

- EP has higher satisfaction scores (median global EVAN-G)
- Opioid consumption (70.5 mg vs. 31.9 mg)
- Electronic activity tracking data higher levels in the EP group

Post operative pain service (POPs)



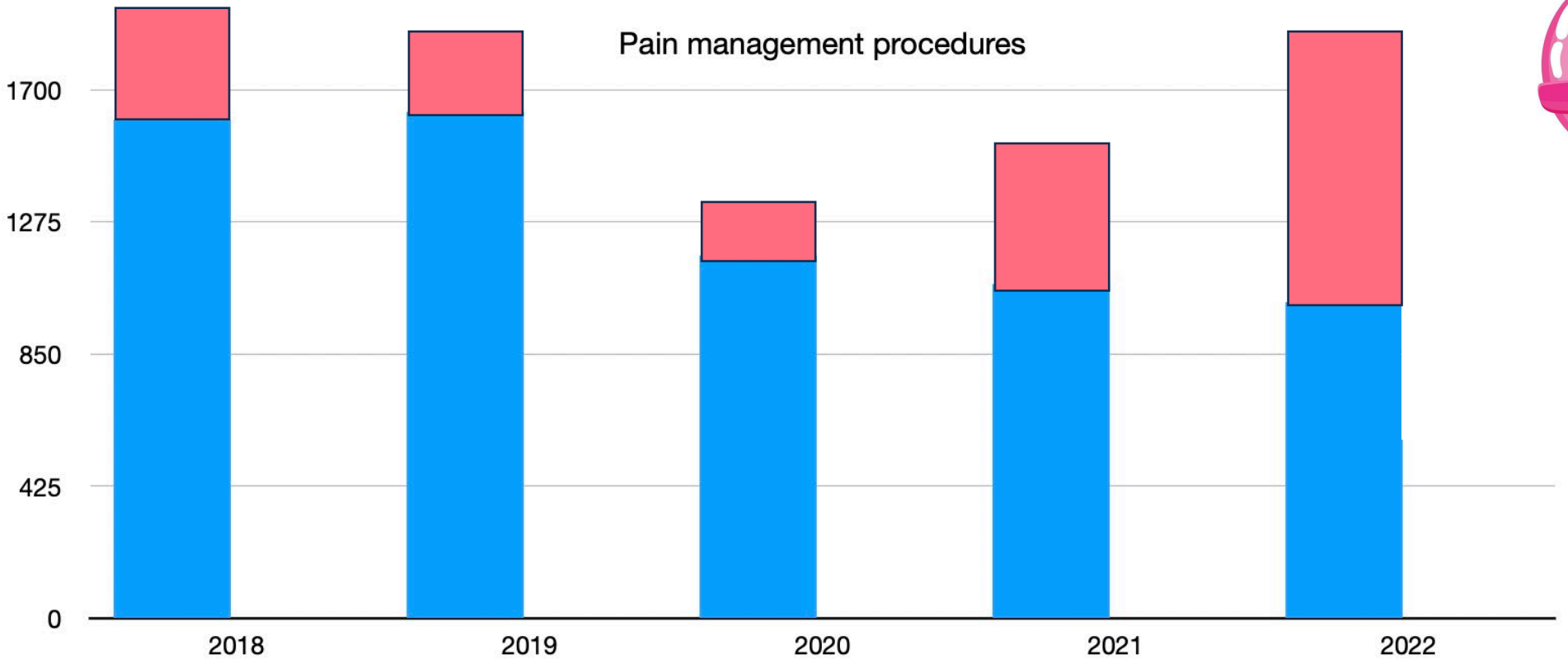
Surgical block

- 2 General surgery
- 1 Vascular surgery
- 1 Neurosurgical
- 2 Urological
- 3 Orthopedic surgery
- 1 plastic surgery
- 1 ENT surgery
- 1 Robotic surgery
- 1 Emergency surgery
- room

Team:

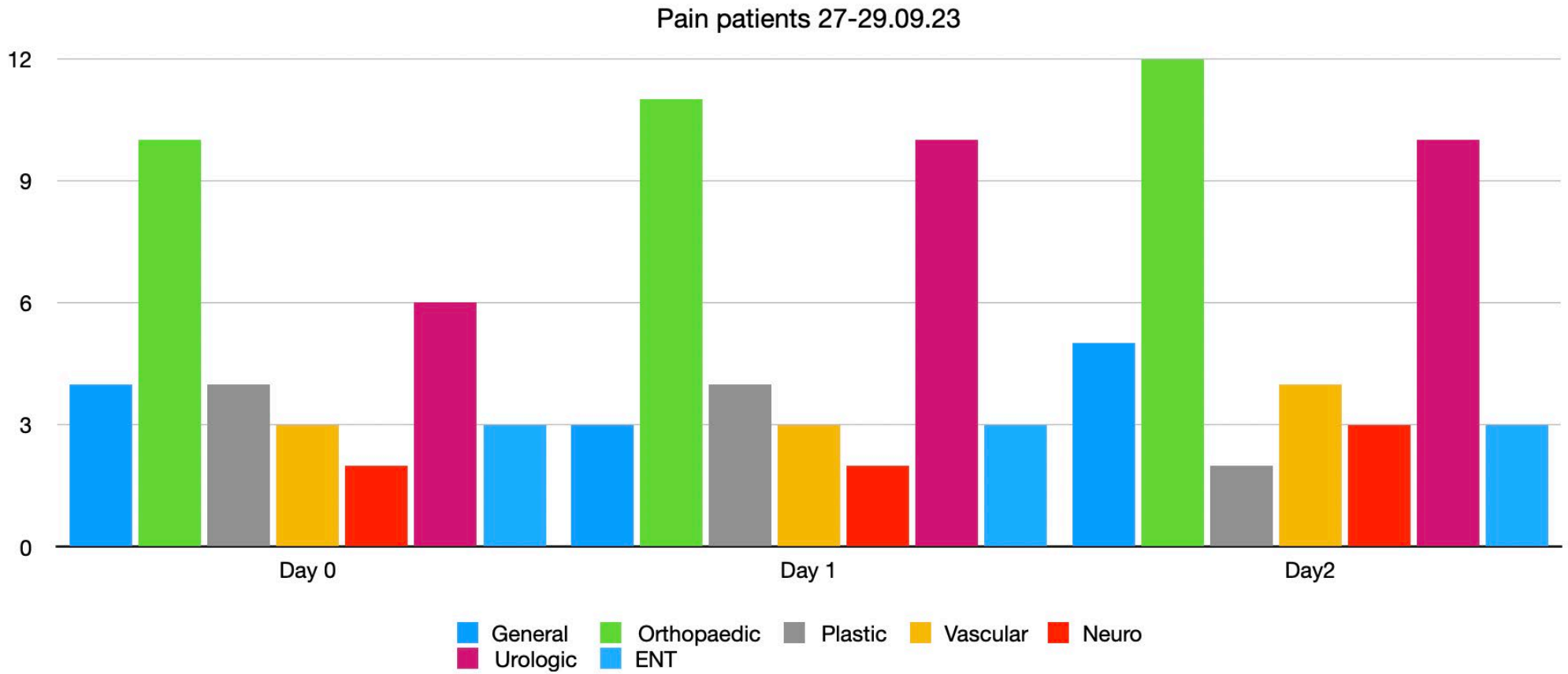
- 4 nurses coordinated by a physician

Post operative pain service (POPs)



- 2018: 1604 **1774**
- 2019: 1629 **1756**
- 2020: 1165 **1301**
- 2021: 1074 **1575**
- 2022: 1016 **1812**

Post operative pain service (POPs)



Protocol: Study design

Patients

- scheduled for orthopedic surgery with programmed postoperative analgesia with continuous peripheral nerve block (CPNB)

Radomly assigned into 2 groups:

- Remote trasmission group
- Control Group

Aim:

- Reduce the team's workload (step count)
- Improve the patient's satisfaction (self report)

Protocol: Study Population

Inclusion criteria:

1. ASA <3, aged 18 or older, scheduled for orthopedic surgery
2. Postoperative analgesia plan with continuous peripheral nerve block (CPNB)

Exclusion criteria:

1. pregnancy, breastfeeding, cognitive impairment, severe coagulopathy, chronic kidney disease and peripheral neuropathy.

Information about the study during a pre-anesthetic consultation

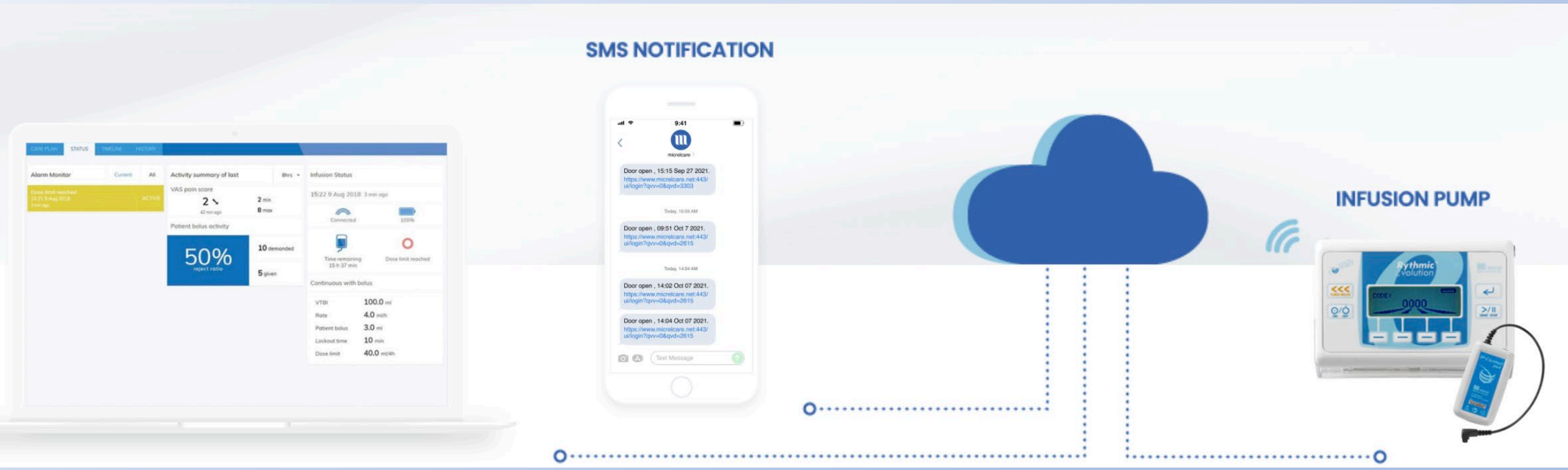
Protocol: perioperative care

Methods:

1. Standard pre anesthesia: 2 mg midazolam
2. A peri-neural catheter placed preoperatively.
3. 0.4 mL/kg of mepivacaine 1.5% injected through the catheter
4. General anesthesia induction with TCI of remifentanil and propofol
5. All patients received 1 g of intravenous paracetamol and 15 mg of intravenous ketorolac

Protocol: postoperative care

1. Nurses prepare the pump after block validation.
2. A Mobile Communication system to the pumps for patients in the RT group
3. Continuous infusion of ropivacaine 2 mg/mL start at 5 mL/h (adjusted on BMI), with a 5 mL bolus, a 30-minute lockout time, and a maximum volume of 40 mL/4 h.
4. In the PACU rescue analgesia, if needed with morphine.


SMS NOTIFICATION
CARE PLAN
STATUS
TIMELINE
HISTORY
Alarm Monitor
Current
All
Activity summary of last
8hrs
Infusion Status
VAS pain score
2
2 min
8 max
15:22 9 Aug 2018 3 min ago
Connected
100%
Patient bolus activity
50%
reject ratio
10 demanded
5 given
Time remaining
15 h 37 min
Dose limit reached
Continuous with bolus
VTBI 100.0 ml
Rate 4.0 ml/h
Patient bolus 3.0 ml
Lockout time 10 min
Dose limit 40.0 ml/4h
9:41
microlcare
Door open , 15:15 Sep 27 2021.
https://www.microlcare.net:443/ui/login?qvv=0&qvd=3303
Today, 10:55 AM
Door open , 09:51 Oct 7 2021.
https://www.microlcare.net:443/ui/login?qvv=0&qvd=2615
Today, 14:04 AM
Door open , 14:02 Oct 07 2021.
https://www.microlcare.net:443/ui/login?qvv=0&qvd=2615
Door open , 14:04 Oct 07 2021.
https://www.microlcare.net:443/ui/login?qvv=0&qvd=2615
Text Message
INFUSION PUMP
Rythmic Evolution
CODE
0000

CARE PLAN | STATUS | TIMELINE | HISTORY

Alarm Monitor — Current | All

Vas pain score 9
15:39 25 Jul 2018
0 min ago
ACTIVE

Activity summary of last 24hrs

VAS pain score
9 ↗
0 min ago
8 min
9 max

Patient bolus activity
50% reject ratio
2 demanded
1 given

Infusion Status

15:38 25 Jul 2018 0 min ago
Connected
100%
Time remaining
16 h 46 min
Infusing

Continuous with bolus

VTBI	200.0 ml
Rate	5.0 ml/h
Patient bolus	5.0 ml
Lockout time	30 min
Dose limit	30.0 ml/4h

Status

Micrel Medical Devices SA Proprietary Information. All rights reserved. Strictly Private and Confidential subject to disclaimer on last page. NOT FOR DISTRIBUTION.

Timeline

The severity of pain has a direct correlation with the number of boluses requested by the patient.

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Results not yet indicatives

- **Limited sample size:**

EP group: 4 patients
Control group: 5 patients

- **Median time of reponse:**

25 min in EP group
110 min in control group

- **Work overload:**

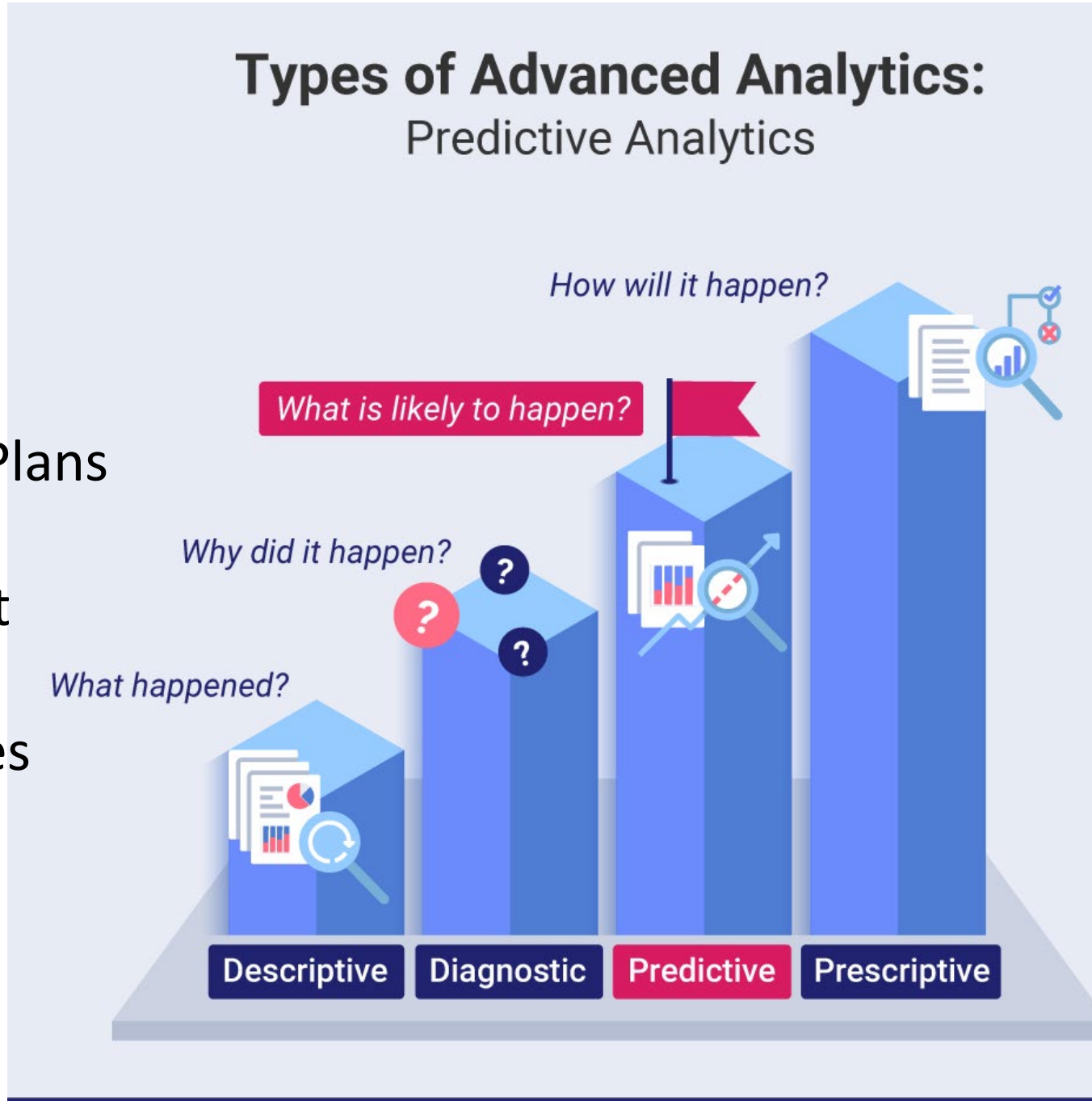
12560 steps EP group
9152 steps in control group

Timeline

Conclusions

AI is having a significant impact on pain control :

- Personalized Treatment Plans
- Predictive Analytics
- Medication Management
- Telemedicine
- Sensory Feedback Devices
- Data Analysis
- Early Detection



ICECAP