



Ultrasound Guided Injections in Musculoskeletal Care

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Ultrasound Guided Injections in Musculoskeletal Care

Disclosures:

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James Lind Injection project

Kent Surrey and Sussex

ZimmerBiomet

Patient-Watch

BOFAS

Introduction

Ultrasound Guided Injections (USGI) has a widespread indications in Musculo-Skeletal System e.g. joint, tendon, nerve, ganglion and bursa

USGI more accurate than “blind” (Anatomical Landmark)

USGI is more popular than X-Ray guided injections (no exposure to ionizing radiation)

All methods are used widely

> [J Bone Joint Surg Br. 2001 Jul;83\(5\):706-8. doi: 10.1302/0301-620x.83b5.11425.](#)

Manipulation and injection for hallux rigidus. Is it worthwhile?

M C Solan ¹, J D Calder, S P Bendall

Affiliations + expand

PMID: 11476310 DOI: [10.1302/0301-620x.83b5.11425](#)

Abstract

Manipulation of the metatarsophalangeal joint and injection with steroid and local anaesthetic are widely practised in the treatment of hallux rigidus, but there is little information on the outcome. We report the results of this procedure carried out on 37 joints, with a minimum follow-up of one year (mean, 41.2 months). Patients with mild (grade-1) changes gained symptomatic relief for a median of six months and only one-third required surgery. Two-thirds of patients with moderate (grade-2) disease proceeded to open surgery. In advanced (grade-III) hallux rigidus, little symptomatic relief was obtained and all patients required operative treatment. We recommend that joints are graded before treatment and that manipulation under anaesthetic and injection be used only in early (grades I and II) hallux rigidus.

Randomized Controlled Trial > [BMJ. 2022 Apr 6;377:e068446. doi: 10.1136/bmj-2021-068446.](#)

Clinical effectiveness of one ultrasound guided intra-articular corticosteroid and local anaesthetic injection in addition to advice and education for hip osteoarthritis (HIT trial): single blind, parallel group, three arm, randomised controlled trial

Zoe Paskins ¹, Kieran Bromley ², Martyn Lewis ², Gemma Hughes ², Emily Hughes ², Susie Hennings ², Andrea Cherrington ², Alison Hall ¹, Melanie A Holden ¹, Kay Stevenson ³, Ajit Menon ³, Philip Roberts ⁴, George Peat ¹, Clare Jinks ¹, Jesse Kigozi ⁵, Raymond Oppong ⁵, Nadine E Foster ⁶, Christian D Mallen ¹, Edward Roddy ⁶

Affiliations + expand

PMID: 35387783 PMCID: [PMC8984871](#) DOI: [10.1136/bmj-2021-068446](#)

[Free PMC article](#)

Abstract

Objective: To compare the clinical effectiveness of adding a single ultrasound guided intra-articular hip injection of corticosteroid and local anaesthetic to advice and education in adults with hip osteoarthritis.

Design: Pragmatic, three arm, parallel group, single blind, randomised controlled trial.

Setting: Two community musculoskeletal services in England.

Participants: 199 adults aged ≥ 40 years with hip osteoarthritis and at least moderate pain: 67 were randomly assigned to receive advice and education (best current treatment (BCT)), 66 to BCT plus ultrasound guided injection of triamcinolone and lidocaine, and 66 to BCT plus ultrasound guided injection of lidocaine.

Interventions: BCT alone, BCT plus ultrasound guided intra-articular hip injection of 40 mg triamcinolone acetate and 4 mL 1% lidocaine hydrochloride, or BCT plus ultrasound guided intra-articular hip injection of 5 mL 1% lidocaine. Participants in the ultrasound guided arms were masked to the injection they received.

Dual Purpose

Diagnostic Investigation

Did it hit the right spot?

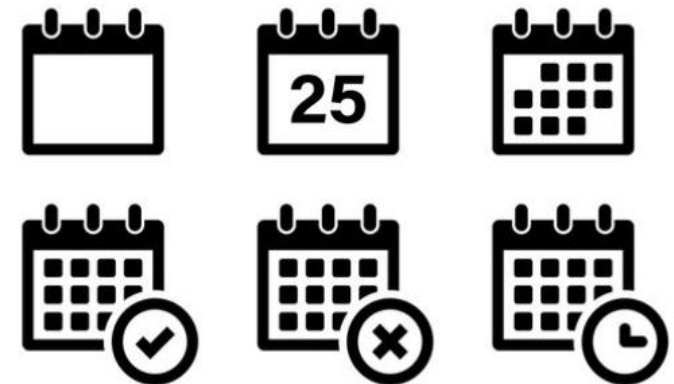
Relies on INITIAL response – hours – Local Anaesthetic



Pain Relief

Variable longevity

Rare to draw conclusions before 6 weeks



Aim of the study

How many MSK injections are we performing?

Retrospective study from PACS data

OPD / Theatre injections not included

Patients and Methods

- Inclusion Criteria
 - Age 18 years and above
- Exclusion criteria
 - Injection not undertaken for clinical reason:
 - Infection on the day of injection
 - Anticoagulation
 - Uncontrolled Diabetes
 - No symptoms on the day
 - No clear pathology for targeted injection

US-Guided MSK injections in 2019

USGI from PACS data

N = 3420

Excludes injections:

In Clinic

In theatre

2019: US Guided injections – analysis of 500

No. Of Patients



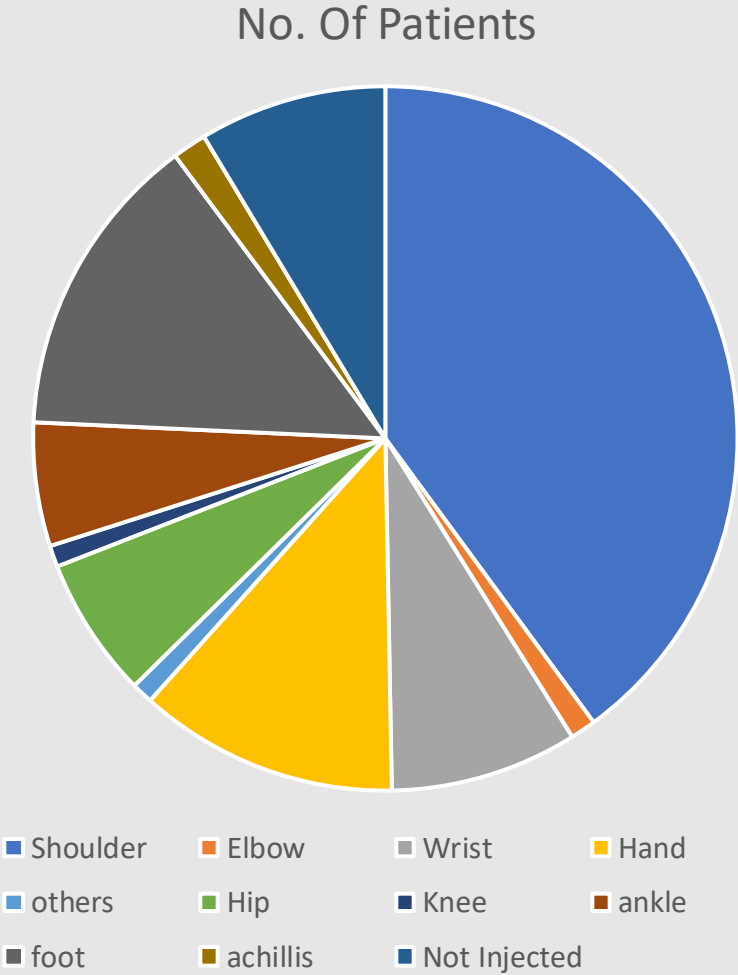
■ Male ■ Female

Average age 56.5 (18yrs – 98yrs)

Gender	No. Of Patients
Male	195
Female	305

Results (n=500) >20% F&A

Anatomical Site	No. Of Patients
Shoulder	204
Elbow	6
Wrist	44
Hand	61
others	5
Hip	33
Knee	5
ankle	29
foot	72
Achilles	8
Not Injected	44



Follow-up problems

Too Early

Longevity?

Traditional

6 weeks - compromise

Late

Did it work initially?

Discharge to GP

How to get back?

Dual Purpose

Diagnostic Investigation

Did it hit the right spot?

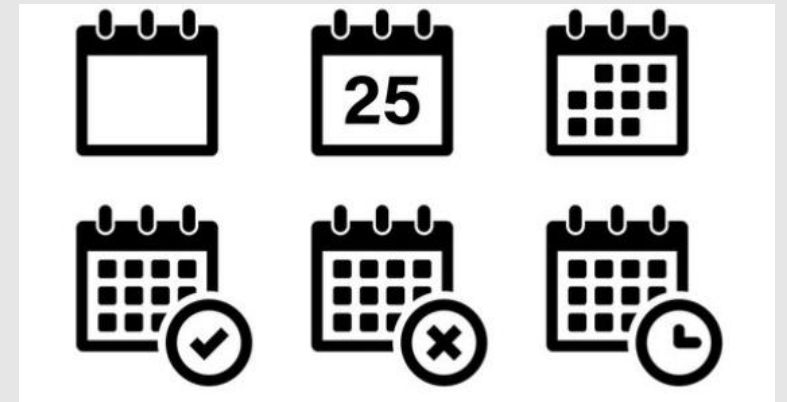
Relies on INITIAL response – hours – Local Anaesthetic



Pain Relief

Variable longevity

Rare to draw conclusions before 6 weeks



Follow-up options

Early	Before Initial Response forgotten
Traditional	6 weeks (Orthopaedic Unit of Time)
Once worn off	Lottery of arranging return
Discharge to GP	Many need re-referral and delay

How do you Follow-Up?



Follow-Up Survey?

Survey of Consultants and StRs – T&O / Rheum / Pain

Structured Questionnaire

BOFAS (others coming)

Preliminary results show poor follow-up strategies



EFAS CONGRESS 2022

EDINBURGH / UK

Wasting everyone's time

Current practice after injections



Royal Surrey

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Medway

Introduction

Injection treatments are commonly offered to help musculoskeletal conditions. The majority are corticosteroid injections.

Inflammatory arthritis, osteoarthritis, and tendinopathies are the most common indications.

Pain relief is difficult to predict in terms of both efficacy & longevity.

The initial response (local anaesthetic) helps to confirm the diagnosis. The duration of pain relief (steroid) is unpredictable.

Aim

To understand current practice in our region of the UK as a prelude to improving efficiency.

Method

An online questionnaire was administered to clinicians who treat patients with injections.

Results

108 responses.
78 Consultants; 28 Registrars, 2 other specialists
Most clinicians >5 injections / week

Follow-up is routinely arranged for:

79% of first injections (Figure1.1)

52% of subsequent injections (Figure1.2)

Remainder of patients offered SOS appointment or discharged to GP

At follow-up, majority of injections still working (Figure 2)

Follow-up was mostly at the 6 to 12 week point (Figure 3)

Fig 1.1 After first injections how often do you arrange routine follow-up appointments

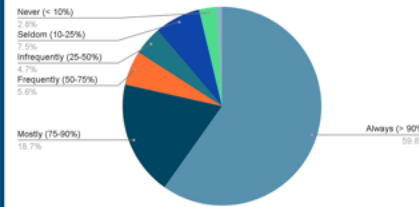


Fig 1.2 After subsequent injections how often do you arrange routine follow-up appointments

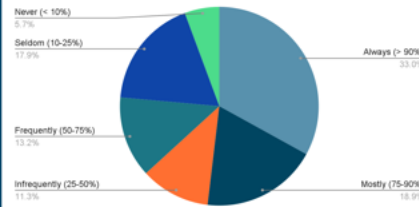


Fig 2 Patient reported outcome of injection

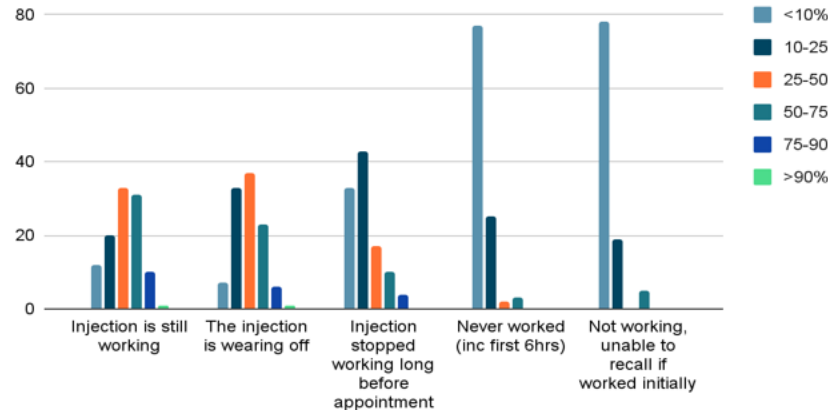
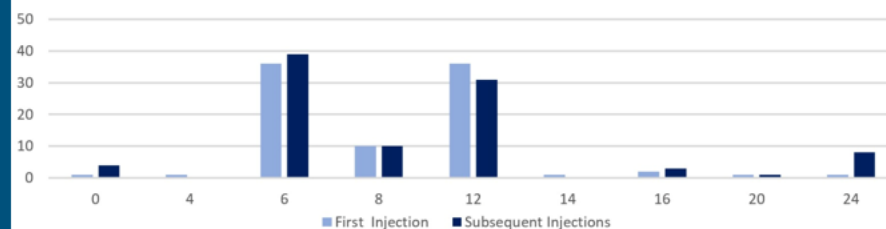


Fig 3 When, after injections, do you typically book a follow-up appointment (in weeks)?



Discussion

Clinicians in our study mostly administered injections themselves in clinic or operating theatre (with or without image guidance).

Only 22% were referred to radiology.

The traditional Orthopaedic 6 - 12 week follow-up appointment was given in nearly all cases, irrespective of clinical improvement.

85% of clinicians frequently or always arrange routine follow-up.

Very few clinicians ask patients to use a pain diary.

At routine follow-up the injection was still working for nearly all patients.

A few had little or no benefit. Some were not able to recall if there was initial benefit.

Follow-up appointments are only needed:
once the benefits have worn off
if there was never any improvement

A routine appointment at 6 – 12 weeks is useful for neither group.

Conclusion

This study shows that routine follow-up appointments after injection are widely used, but are wasteful and inefficient.

Current practice wastes everyone's time

Strategies to record pain scores and invite review only when the benefits of injection have failed / faded could save millions of pounds/euros.

How do I organise Follow-Up? 🧐

Initial Response “Can’t remember”

See as/when required

Option to auto-repeat

Designed around the patient



Homework – Pain Diary

Pain Diary - Radiology

BOTH Initial Response
AND longevity

Return by post / email

Review / Repeat / Discharge

NAME: _____	
<u>TIME</u>	<u>PAIN SCORE</u> 0 – 10 0 = Pain free 10 = Worst pain imaginable
Pre-injection	
Immediately post-injection	
4 – 8 hours post-injection	
24 hours post-injection	
48 hours post-injection	
One week post-injection	
Two weeks post-injection	
One month post-injection	

PIFU – improved Patient Diary experience

Pain Diary to record Initial Response AND longevity

Return by post / email

Review / Repeat / Discharge / **PIFU**



PIFU + Diary saves appointments in F&A....

3420 USGI

F&A 20% x 3420 = 700 appts/yr

>6000 with spine/pain/opd



What if.....Digitalise Pain Diary?

Easy data collection

Reminders

Permanent record

Graph

Big Data


Automatic responses


Safeguards against Lost to Follow-up




Imperial College

**Imperial College
London**

 Arctic clouds and harnessing light:
News from the College

 Imperial receives second award for
openness around animal research

 Real-time epidemic forecasting tool
to support global outbreak
monitoring

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Electronic Diary – V1

Pain Diary

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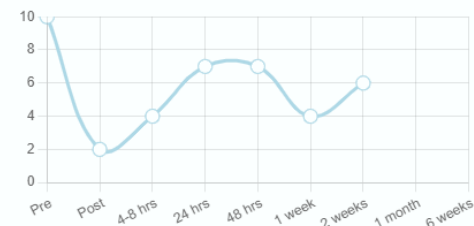
Time	Pain Score (0-10)
Pre Injection	10
Immediately Post Injection	2
4-8 hours Post Injection	4
24 hours Post Injection	7
48 hours Post Injection	7
1 week Post Injection	4
2 weeks Post Injection	6
One month Post Injection	-
6 weeks Post Injection	-

Name [AN Other](#)

Injection Date 14:15 - 2022-04-28

Injectic Left Foot and Ankle - Flexor

Site Hallucis Longus at posterior ankle



[Download Results](#)

[Back to Search](#)

Download PDF

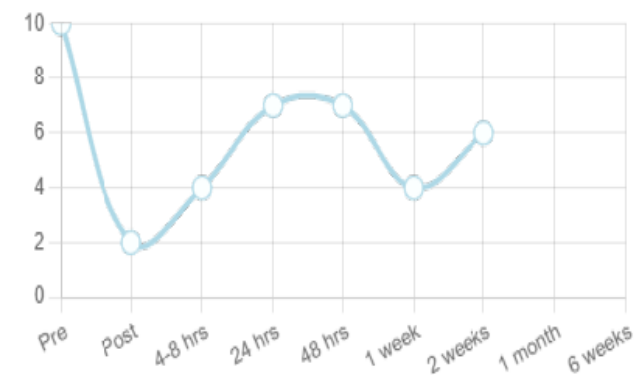
Patient Report

Patient Name: [REDACTED]

Injection Date: 14:15 - 2022-04-28

Injection Site: Left Foot and Ankle -
Flexor Hallucis Longus at posterior ankle

Injection Time	Pain Score (0-10)
Immediately Post Injection	2
4-8 hours Post Injection	4
24 hours Post Injection	7
48 hours Post Injection	7
1 week Post Injection	4
2 weeks Post Injection	6
One month Post Injection	-
6 weeks Post Injection	-



Intelligent Diary V2

Patient-Watch

Easy data collection

Reminders

Permanent record

Graph

Scenario analysis

Automatic responses from Doctor

Safeguards against Lost to Follow-up



NHS
Digital

[NHS Digital](#) >

PDF report for patient & notes

John Smith

02434121

Patient
Watch

Injection Details

Date: 05/10/1998

Side: Left

Area: Foot and Ankle

Site: Trochanteric bursitis/Gluteal
tendinopathy

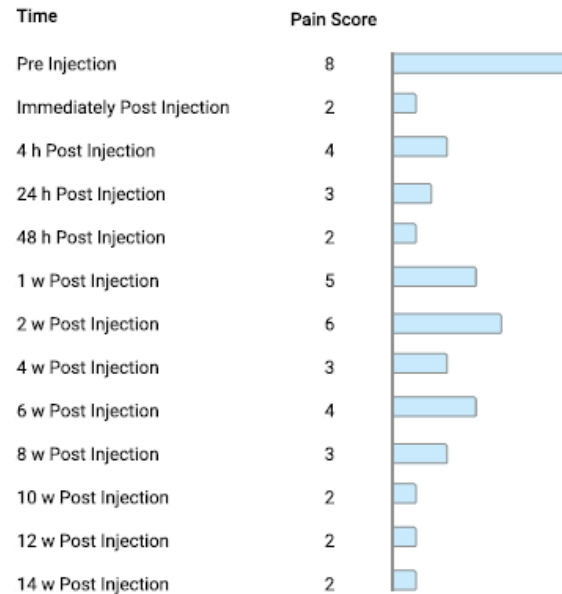
Doctor Details

Referring: Elizabeth Winsor

Injecting: Michael Jackson

Outcome

Discharged



Regular Email with triaged patient list

Patient Watch

Search for a patient...



Flag Patient Name ↑ Injection Location AWOL

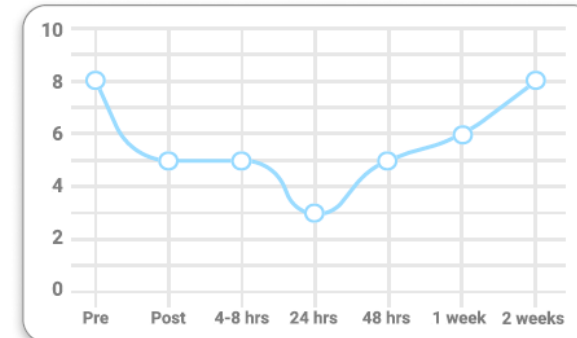
- ☒ Pain Rising
- ☒ Pain Reduced
- ☐ Never Worked
- ☐ No Flag
- ☐ Passive Monitoring
- ☐ Discharged

	on	Left Foot - 3rd Metatasle	
		Right Hip - Rectus Femoris	
		Right Elbow - Tennis Elbow	
	Jose Aldo	Right Ankle - Plantar Faciitis...	
	Ellie Jamieson	Left Foot - 3rd Metatasle	
	Max Phillips	Right Hip - Rectus Femoris	
	James Gonzalez	Flexor Hallucis Longus at Post ...	
	Albert Mundao	Right Ankle - Plantar Faciitis...	
	Muhammad Quiarishi	Ilio-tibial band	
	Jose Aldo	Right Ankle - Plantar Faciitis...	

James Gonzalez 0193838292

10:40am 12/05/2022

Right - Foot and Ankle - Flexor Hallucis Longus at posterior ankle



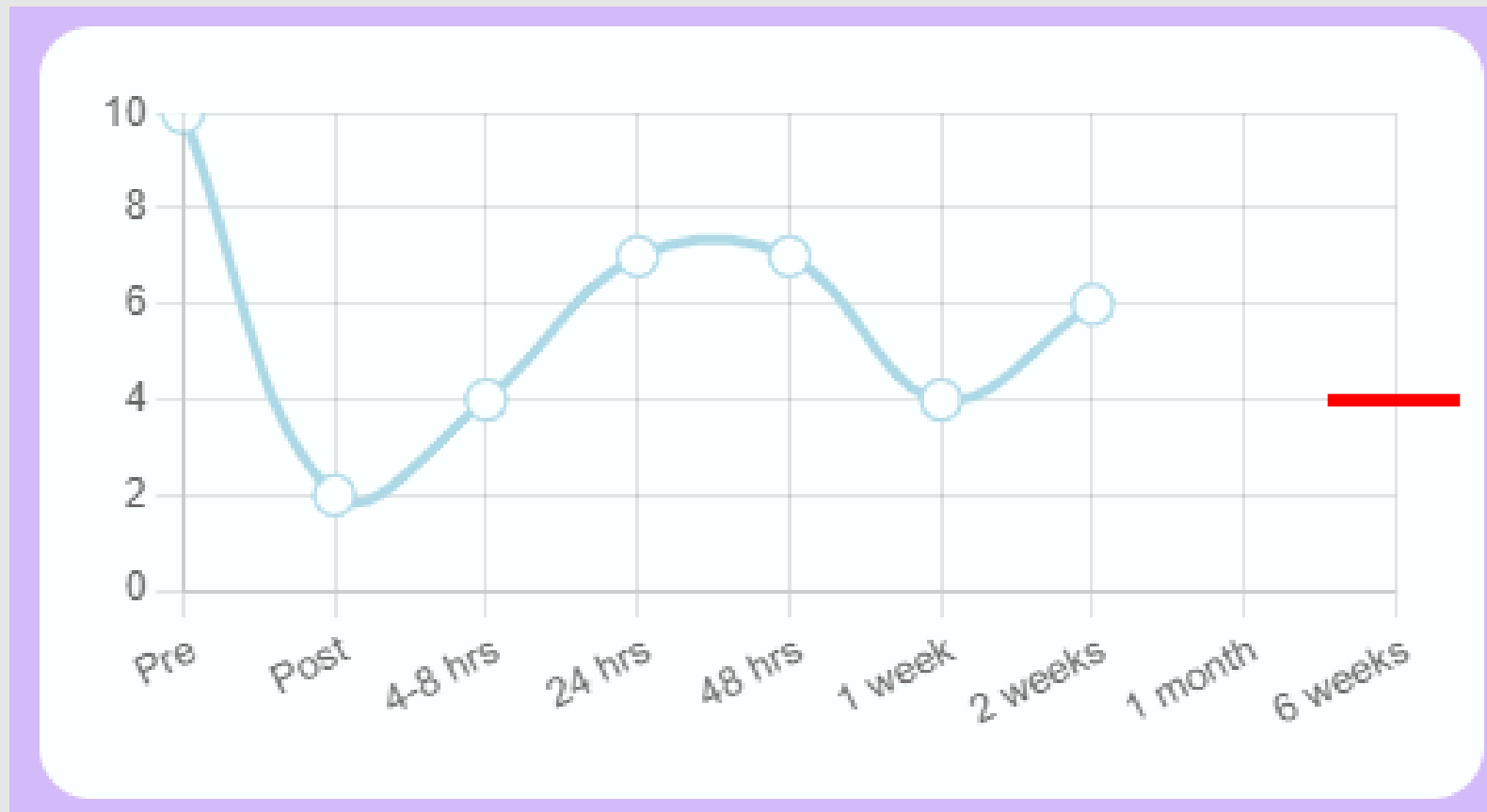
Injection given 2nd April 2022

Discharge



Select

Pre-set thresholds for PIFU / DC



Standard Letters

Alerts avoid Lost to F-up

Patient Watch

Search for a patient...



Flag ▾	Patient Name ↑	Injection Location	AWOL
<input checked="" type="checkbox"/> Pain Rising	on	Left Foot - 3rd Metatasle	⚠
<input checked="" type="checkbox"/> Pain Reduced		Right Hip - Rectus Femoris	
<input type="checkbox"/> Never Worked		Right Elbow - Tennis Elbow	
<input type="checkbox"/> No Flag		Right Ankle - Plantar Faciitis...	⚠
<input type="checkbox"/> Passive Monitoring	JOSE ALDO	Left Foot - 3rd Metatasle	
<input type="checkbox"/> Discharged	Ellie Jamieson	Right Hip - Rectus Femoris	
	Max Phillips	Flexor Hallucis Longus at Post ...	
	Maxime Mermoz	Right Ankle - Plantar Faciitis...	
	Muhammad Quiarishi	Ilio-tibial band	
	Jose Aldo	Right Ankle - Plantar Faciitis...	⚠

From doctor@patientwatch.com
To jamesgonzalez@gmail.com
Cc secretary@nhs.net

Pain Increase - Follow Up Appointment

Dear James,

I can see that your pain has returned following your injection.

I would like to arrange another appointment. Please correspond with my secretary (secretary@nhs.net) and continue with your diary until the appointment.

Kind regards,

Kate Hasting

James Gonzalez.pdf

Send

PIFU and Injections

Patient-Watch

USGI is the perfect model for PIFU

Large numbers

Autonomy

Savings £££

Digital data (Research potential)

BOFAS James Lind Injection project

www.patient-watch.com/help/doctor



matthewsolan@nhs.net
guy@patient-watch.com

Questions / Get Involved