

# Protocol: Opioid prescribing among people on elective waiting lists during the COVID-19 pandemic: a study in OpenSAFELY-TPP

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**Github repository:** <https://github.com/opensafely/waiting-list>

## Background

There is an expectation that 92% of people on a referral-to-treatment (RTT) waiting list receive treatment within 18 weeks, unless otherwise clinically indicated.(1) However, even before the COVID-19 pandemic, there was a backlog in hospital treatment in England leading to long wait times. This was exacerbated during the pandemic, with postponement of non-urgent elective procedures during outbreaks, and the effects are ongoing. As of August 2022, there were 7 million people awaiting treatment, with 2.75 million waiting over 18 weeks.(2) There are also concerns that the impact of delayed procedures has disproportionately affected people in socioeconomically deprived areas.(3)

Many common conditions for which people receive elective surgery, such as arthroplasty for osteoarthritis, require pain management; thus longer waiting times may mean that patients require more and stronger analgesia to treat their symptoms, which often includes opioids.(4–6) This may have been particularly true during the pandemic, when access to non-pharmacological treatments was limited.(7) The risks associated with overuse of opioids are well established, and include short-term effects such as sedation and respiratory depression, and long-term effects including dependence and tolerance. Thus, the aim of this study was to understand to what degree patients on waiting lists are being prescribed opioids and how this changes in relation to time spent waiting.

## Objectives

1. What are the demographic and clinical characteristics of people on non-emergency, consultant-led waiting lists during the COVID-19 pandemic?
2. What are the opioid prescribing patterns among people on non-emergency, consultant-led waiting lists, specifically:
  - a. Is length of time on a waiting list associated with: a greater probability of being prescribed any opioid and/or a higher strength opioid? How does this compare to the period preceding the start of the waiting period?

- b. Among people with completed pathways, how does opioid prescribing change post-procedure? Are people with a longer wait more likely to continue using opioids long-term?

## Glossary

**Referral to treatment (RTT) pathway:** RTT pathways are consultant-led referrals for non-emergency services. It is initiated when a patient receives a referral for a particular treatment, and ends when the patient receives first definitive treatment, enters active monitoring, a decision is made not to treat, or the patient declines treatment or dies. A patient may have multiple RTT pathways. Also called “RTT period”.

**Non-RTT pathway:** Non-RTT pathways are non-consultant-led and planned care services such as physiotherapy, outpatient follow-ups, cancer surveillance, transplant follow ups, some diagnostics and chronic disease management.

**Patient pathway:** A patient pathway is usually considered to be the journey from first contact with the NHS for an individual condition, through referral, diagnosis and treatment for that condition. For chronic conditions, a patient pathway will continue beyond the point at which first definitive treatment starts, as it will include further treatment for the same condition. A person may therefore have multiple RTT pathways (or periods) along one patient pathway. A patient may also have multiple pathways if they are waiting for treatment for different conditions. Not to be confused with RTT pathway.(8)

**Clock start:** Start date for a RTT period.

**Clock stop:** End date for a RTT period.

**Admitted pathway:** Pathways that ended with admission to hospital. These are sometimes referred to as inpatient waiting times.

**Non-admitted pathway:** Pathways that ended for reasons other than an inpatient or day case admission to hospital for treatment. These are sometimes referred to as outpatient waiting times. They include patients whose RTT waiting time clock either stopped for treatment or other reasons, such as declining treatment.

## Methods

### Data sources

Aside from the core OpenSAFELY data, we will use also the following waiting list data:

- WL\_ClockStops (completed RTT pathways, May 2021 to May 2022)
- WL\_OpenPathways (open RTT and non-RTT pathways as of May 2022)

A list of relevant variables in these datasets is in the Appendix.

## Study population

### Inclusion:

- Age 18 years 6 months prior to waiting list referral date;
- Male/female sex;
- Registered at one practice  $\geq 6$  months prior to waiting list referral date;
- On a RTT (consultant-led, non-emergency) pathway;
- For people with multiple eligible pathways, restrict to most recent RTT pathway only;
- People on pathways for surgical treatment with a treatment code indicating trauma/orthopaedics;

### Exclusion:

- People with evidence of incorrect dates (very old referral date, futures dates, end date before referral date);
- Missing referral or end date;
- Missing age or sex;
- Cancer diagnosis in past 5 years.

### Censoring:

- End of study period (May 2022);
- Death;
- Deregistration from practice.

## Study measures

### *Waiting list measures*

#### Time on waiting list:

- Defined as the difference between the RTT start date and the RTT end date (for people on closed RTT pathways) or May 2022 (for people on open RTT pathways). For certain analyses, time on waiting list will be divided into three categories:  $\leq 18$  weeks, 19-52 weeks,  $> 52$  weeks.

#### RTT pathway:

- Indicated by the following waiting list type: admitted RTT pathway (IRTT) or non-admitted RTT pathway (ORTT). Due to data entry/coding errors and use of old codes (e.g. RTT used to be Patient Treatment List [PTL]), we will also include: PTLO, PTLI, PLTI, RTTO, RTTI, PTL0, PTL1.

#### Treatment type and specialty:

- We will restrict to people with a surgical treatment treatment code for trauma/orthopaedics (110). A full list of codes are included in the Appendix.

### *Outcome measures*

- We will include all opioids for analgesia, including combination products (excluding opioids for opioid use disorder, motility problems, cough or as general anaesthesia (BNF

Chapter 4.7.2 and relevant combinations under 4.7.1). See full codelists for more information.

- Among people with completed RTT pathways, we will estimate the proportion of people prescribed an opioid in each week over 3 time periods:
  - 6 months (26 weeks) prior to start of waiting list: the denominator will be everyone in the study;
  - During waiting list: the denominator will be everyone who was still on a waiting list and alive/registered at a given month;
  - 6 months (26 weeks) after end of waiting list: the denominator will be everyone who is still alive/registered at their practice in a given month.
- We will evaluate the following opioid prescribing measures (list of codelists is in the Appendix):
  - Any opioid (excluding those purchased over the counter or for cough suppression);
  - High dose, long-acting opioids.
- Other analgesic: we will count the number of prescriptions for the following non-opioid pain medicines in the baseline period (6 months prior to waiting list) and identify co-prescribing during the waiting list period:
  - NSAIDs, gabapentinoids, antidepressants (i.e.TCAs, SNRIs), benzodiazepines.

#### *Population characteristics*

- We will include the following variables defined on the waiting list start date: age (18-44, 45-54, 55-64, 65-74, 75-84, 85+ years); sex (male, female); practice region; IMD decile; ethnicity (6 and 16 categories).
- We will also include the following comorbidities/conditions, identified in the 6 months prior waiting list start date:
  - Chronic cardiac disease, chronic kidney disease, chronic liver disease, chronic respiratory disease, diabetes, osteoarthritis, mental health conditions;
  - Frailty;
  - For those subset of conditions that may impact on opioid use, we will identify the first recorded date during the study period to identify whether they arose while the patient was on the waiting list.

## **Analysis**

#### *Characteristics of people on waiting list*

We will describe the demographic (age, sex, IMD decile, region), clinical (comorbidities), and waiting list (urgency, specialty) characteristics of people on waiting lists during the study period using relative frequency distributions. We will do this separately for completed, and open pathways.

We will describe the distribution of time on a waiting list and will estimate the median/IQR waiting. We will also estimate the proportion still waiting >18 weeks and >52 weeks. We will do this overall, and stratified by key demographics and referral specialty.

#### *Opioid prescribing to people on waiting list*

We will estimate the proportion of people prescribed each opioid type of interest by time period (pre-waiting list, during waiting list, post-waiting list end) as described above. We will plot the proportion of people prescribed an opioid in each 4 week period over time in relation to waiting list referral date and end date. We will do this overall, and stratified by referral specialty and prior opioid prescribing.

## Limitations

- Some acute trusts do not report RTT data. This varies by month. However, the number of non-reporting trusts is small, and mostly affects absolute counts (not relative measures).

## References

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## Appendix

Appendix Table 1. List of waiting list data variables for analysis. Note that these variables appear in both WL\_Clockstops and WL\_OpenPathways.

Variable	Definition	Purpose / comment
Week ending date	Week that the entry refers to	Calculate time on WL for open pathways
Waiting list type	RTT vs non-RTT, admitted vs non-admitted	Identify RTT pathways. Note that it includes categories not in data dictionary.
Referral identifier, Patient pathway identifier, Organisation code patient pathway identifier issuer	Identifiers for referral / pathway / organisation	Together, these can be used to identify unique pathways
Referral request received date	Date referral was received for original pathway	Identify start of original patient pathway
Referral to treatment period start date	Start of RTT period	Identify start of RTT period. This is more relevant for calculating waiting time than referral request received date. In practice, for RTT pathways this is almost always the same as referral request received date.
Activity treatment function code	Treatment type (e.g., surgical, medical) and specialty (e.g. orthopaedics, gynaecology)	See Appendix Table 2
Priority type code	Urgent or routine or two week wait	Note it contains categories not in data dictionary
Source of referral	Source of referral for original pathway (e.g. GP)	
Referral to treatment period end date	End of RTT period	To identify end of RTT period. Blank for open RTT pathways.

Appendix Table 2: List of treatment function codes

Code	Treatment Function Title
<b>Surgical Specialties</b>	
100	General Surgery Service
101	Urology Service
102	Transplant Surgery Service
103	Breast Surgery Service
104	Colorectal Surgery Service
105	Hepatobiliary and Pancreatic Surgery Service
106	Upper Gastrointestinal Surgery Service
107	Vascular Surgery Service
108	Spinal Surgery Service
109	Bariatric Surgery Service
110	Trauma and Orthopaedic Service
111	Orthopaedic Service
113	Endocrine Surgery Service
115	Trauma Surgery Service
120	Ear Nose and Throat Service
130	Ophthalmology Service
140	Oral Surgery Service
141	Restorative Dentistry Service
143	Orthodontic Service
144	Maxillofacial Surgery Service
145	Oral and Maxillofacial Surgery Service
150	Neurosurgical Service
160	Plastic Surgery Service
161	Burns Care Service
170	Cardiothoracic Surgery Service
172	Cardiac Surgery Service
173	Thoracic Surgery Service
174	Cardiothoracic Transplantation Service
<b>Other Children's Specialist Services</b>	
142	Paediatric Dentistry Service
171	Paediatric Surgery Service
211	Paediatric Urology Service
212	Paediatric Transplantation Surgery Service

213	Paediatric Gastrointestinal Surgery Service
214	Paediatric Trauma and Orthopaedic Service
215	Paediatric Ear Nose and Throat Service
216	Paediatric Ophthalmology Service
217	Paediatric Oral and Maxillofacial Surgery Service
218	Paediatric Neurosurgery Service
219	Paediatric Plastic Surgery Service
220	Paediatric Burns Care Service
221	Paediatric Cardiac Surgery Service
222	Paediatric Thoracic Surgery Service
223	Paediatric Epilepsy Service
230	Paediatric Clinical Pharmacology Service
240	Paediatric Palliative Medicine Service
241	Paediatric Pain Management Service
242	Paediatric Intensive Care Service
250	Paediatric Hepatology Service
251	Paediatric Gastroenterology Service
252	Paediatric Endocrinology Service
253	Paediatric Clinical Haematology Service
254	Paediatric Audio Vestibular Medicine Service
255	Paediatric Clinical Immunology and Allergy Service
256	Paediatric Infectious Diseases Service
257	Paediatric Dermatology Service
258	Paediatric Respiratory Medicine Service
259	Paediatric Nephrology Service
260	Paediatric Medical Oncology Service
261	Paediatric Inherited Metabolic Medicine Service
262	Paediatric Rheumatology Service
263	Paediatric Diabetes Service
264	Paediatric Cystic Fibrosis Service
270	Paediatric Emergency Medicine Service
280	Paediatric Interventional Radiology Service
290	Community Paediatric Service
291	Paediatric Neurodisability Service
321	Paediatric Cardiology Service
421	Paediatric Neurology Service



<b>Medical Specialties</b>	
180	Emergency Medicine Service
190	Anaesthetic Service
191	Pain Management Service
192	Intensive Care Medicine Service
200	Aviation and Space Medicine Service
300	General Internal Medicine Service
301	Gastroenterology Service
302	Endocrinology Service
303	Clinical Haematology Service
304	Clinical Physiology Service
305	Clinical Pharmacology Service
306	Hepatology Service
307	Diabetes Service
308	Blood and Marrow Transplantation Service
309	Haemophilia Service
310	Audio Vestibular Medicine Service
311	Clinical Genetics Service
313	Clinical Immunology and Allergy Service
314	Rehabilitation Medicine Service
315	Palliative Medicine Service
316	Clinical Immunology Service
317	Allergy Service
318	Intermediate Care Service
319	Respite Care Service
320	Cardiology Service
322	Clinical Microbiology Service
323	Spinal Injuries Service
324	Anticoagulant Service
325	Sport and Exercise Medicine Service
326	Acute Internal Medicine Service
327	Cardiac Rehabilitation Service
328	Stroke Medicine Service
329	Transient Ischaemic Attack Service
330	Dermatology Service
331	Congenital Heart Disease Service

333	Rare Disease Service
335	Inherited Metabolic Medicine Service
340	Respiratory Medicine Service
341	Respiratory Physiology Service
342	Pulmonary Rehabilitation Service
343	Adult Cystic Fibrosis Service
344	Complex Specialised Rehabilitation Service
345	Specialist Rehabilitation Service
346	Local Specialist Rehabilitation Service
347	Sleep Medicine Service
348	Post-COVID-19 Syndrome Service
350	Infectious Diseases Service
352	Tropical Medicine Service
360	Genitourinary Medicine Service
361	Renal Medicine Service
370	Medical Oncology Service
371	Nuclear Medicine Service
400	Neurology Service
401	Clinical Neurophysiology Service
410	Rheumatology Service
420	Paediatric Service
422	Neonatal Critical Care Service
424	Well Baby Service
430	Elderly Medicine Service
431	Orthogeriatric Medicine Service
450	Dental Medicine Service
451	Special Care Dentistry Service
460	Medical Ophthalmology Service
461	Ophthalmic and Vision Science Service
501	Obstetrics Service
502	Gynaecology Service
503	Gynaecological Oncology Service
504	Community Sexual and Reproductive Health Service
505	Fetal Medicine Service
834	Medical Virology Service
<b>Mental Health Services</b>	

656	Clinical Psychology Service
700	Learning Disability Service
710	Adult Mental Health Service
711	Child and Adolescent Psychiatry Service
712	Forensic Psychiatry Service
713	Medical Psychotherapy Service
715	Old Age Psychiatry Service
720	Eating Disorders Service
721	Addiction Service
722	Liaison Psychiatry Service
723	Psychiatric Intensive Care Service
724	Perinatal Mental Health Service
725	Mental Health Recovery and Rehabilitation Service
726	Mental Health Dual Diagnosis Service
727	Dementia Assessment Service
730	Neuropsychiatry Service
<b>Other Services</b>	
560	Midwifery Service
650	Physiotherapy Service
651	Occupational Therapy Service
652	Speech and Language Therapy Service
653	Podiatry Service
654	Dietetics Service
655	Orthoptics Service
657	Prosthetics Service
658	Orthotics Service
659	Dramatherapy Service
660	Art Therapy Service
661	Music Therapy Service
662	Optometry Service
663	Podiatric Surgery Service
670	Urological Physiology Service
673	Vascular Physiology Service
675	Cardiac Physiology Service
677	Gastrointestinal Physiology Service
800	Clinical Oncology Service

811	Interventional Radiology Service
812	Diagnostic Imaging Service
822	Chemical Pathology Service
840	Audiology Service
920	Diabetic Education Service