

Recovery in Long Term Conditions

A report commissioned and funded by AbbVie Research, data analysis and observations were conducted by Carnall Farrar using a mix of publicly-available and proprietary data sources.

Data periods used: Jun '20 – Nov '21 inclusive, for GP data, Jun '20 – Nov '21 inclusive for Health Checks, Oct '19 – Nov '21 inclusive for referrals, and Mar '20 – Oct '20 inclusive for hospital data. The report is based on calculations obtained via the model and is a possible scenario only. See appendix for full references.

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Glossary of terms

Term	Explanation
Long term conditions or chronic conditions	Diseases that persist on an ongoing basis and more than 3 months – they are typically manageable but not curable
Elective care or Planned care	This is care that is planned in advance e.g., an operation or a hospital episode to receive planned treatment
Non-elective or Acute care	This is care that is not planned in advance e.g., emergencies or flare-ups requiring treatment
Outpatient attendance	Patient attending a planned outpatient clinic
Hospital admission	Patient admitted beyond A&E into a hospital bed
Inpatient	Patient admitted to a hospital bed
Length of stay (LOS)	Time, in days, spent in a hospital bed as an inpatient
‘Missing’ or ‘Missed’ patients or appointments	This is the difference between the activity we would expect to see based on pre-pandemic activity and the activity we actually see in the national data
‘Backlog’	This is the aggregate number of appointments or activity units that were missing over the time period, assuming that some activity will not need to be recovered. It is an indicative number and is not the same as the identifiable waiting list which is more multifactorial and unavailable in national data

Executive summary (1/2)

Activity levels are slowly returning to pre-Covid levels across the health system though this varies significantly

- Only some months had more **GP attendances** than the pre-Covid average between March 2020 and September 2021, however since October 2021 this has been **consistently risen above average with c.30 million appointments in November 2021**
- **Referrals relative to the pre-Covid period reduced by 26% during the first wave, and still remained 7% lower than pre-Covid in November 2021.** Some specialties such as Diagnostic Endoscopy have seen a slower rate of recovery, whilst others such as **ophthalmology and neurology saw 4-week rolling averages of over 95% of pre-Covid between September and November 2021**
- The first wave of Covid-19 saw a **significant drop in 1st outpatient appointments**, though with large variation across specialties. By **October 2021 some specialties had returned to close to or above pre-Covid levels** whilst others remained significantly reduced. The same pattern is seen for elective hospital admissions
- **Non-elective admissions have fluctuated significantly** throughout the pandemic, though for the diseases of interest this is **likely impacted by relatively small numbers**

However, whilst activity levels are slowly recovering, waiting lists and total missing activity have continued to rise

- **In the year from March 2020 1st outpatient appointments were c. 30% lower than the year prior to Covid**, suggesting significant missing appointments. This **drop in 1st appointments may suggest missed diagnoses**. The number missing will likely continue to grow in specialties where activity has not yet returned to pre-Covid
- Similarly for inpatient elective activity, **in the year from March 2020 attendances were c. 17% lower than the year prior to Covid**

In all there are several impacts of Covid potentially indicated in these figures

- Some individuals have not come forward with their symptoms, meaning there are **patients 'missing' from the system**
- **GPs may not be able to identify chronic conditions as accurately over the phone** so some patients have not been referred to secondary care given the rise in telemedicine
- **Services have started to recover but there is still a growing waiting list** into and in secondary care (a lack of elective recovery)
- **Patients have lost multi-specialty care** (for connected comorbidities) where they need it
- **Symptom and progression control (secondary and tertiary prevention) has been insufficient**, meaning patients have had more exacerbations, or disease progression

Executive summary (2/2)

- Considering the continued delays for diagnosis and treatment of long-term conditions, the system needs to think differently about what it is doing. At a system level, there are two competing problems for the NHS emerging from COVID; a **lack of capacity in hospital care** and **Unservd demand in primary care**
- **In considering these problems it is important to remember that the impacts aren't equally felt**, and are greater in groups such as older patients, individuals living in more deprived areas and those of ethnic minorities
- While both problems are important to solve, **it is critical to create additional capacity in secondary care as a priority to enable both problems to be solved effectively**

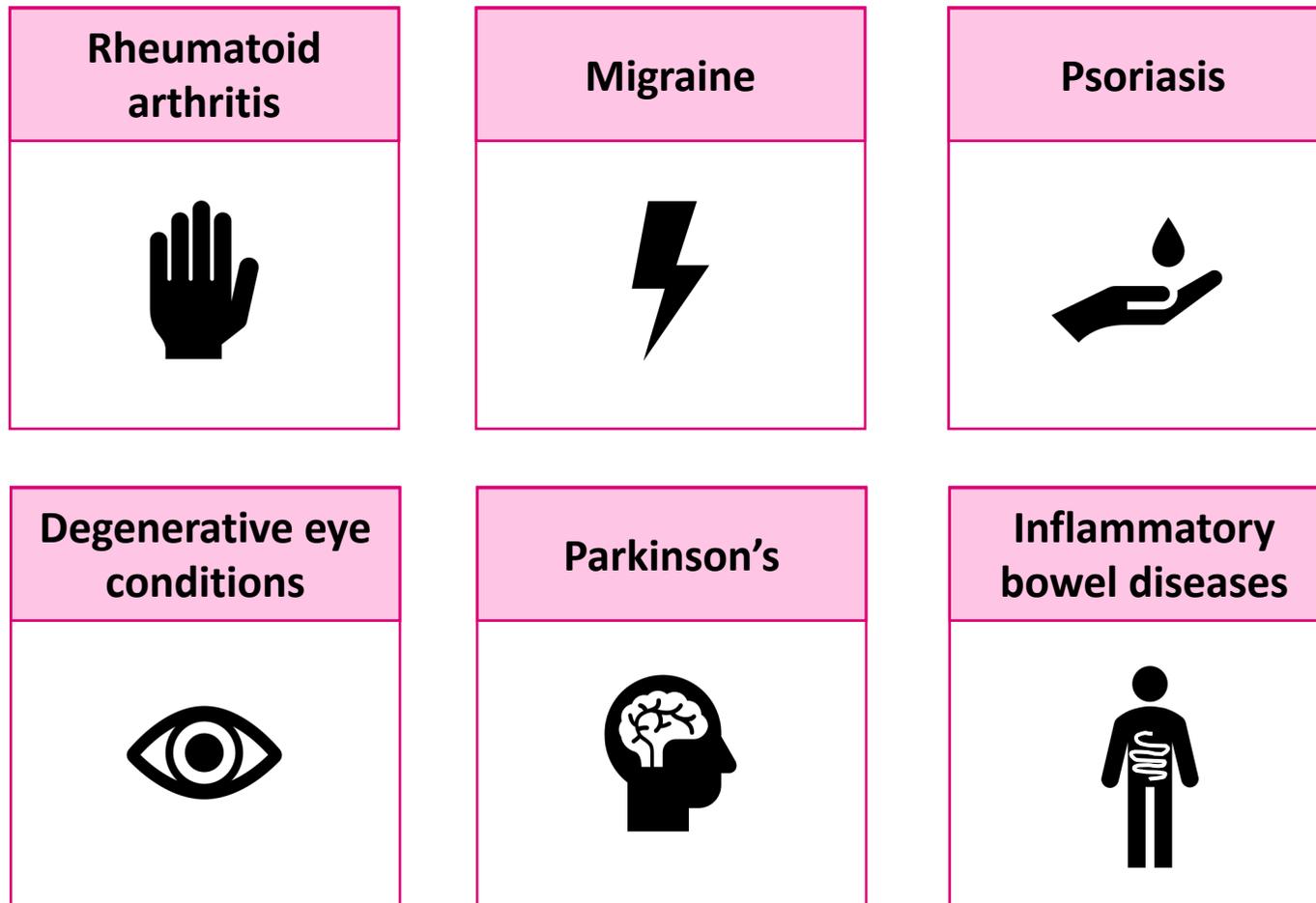
Addressing the lack of capacity in hospital care

- If the 75% of CCGs with highest nonelective admissions rates (in the year prior to Covid) reduced their rates in line with the 25th percentile for each condition, **nonelective admissions could be reduced by 29%** overall
- If the highest 75% of CCGs reduced LOS (in the year prior to Covid) in line with the 25th percentile for these conditions, **Bed days could be reduced by 83,796 (24%)**, freeing capacity for recovery
- The combination of reducing non-elective admissions and reducing length of stay could **save 124,000 bed days per year**
- **Increasing capacity would impact on the backlogs**, for example moving from a 10% increase in capacity to 15% cuts backlog by 40% in both outpatients and elective admissions
- However, some conditions face **multi-year backlogs even with 15% capacity increase**

Addressing unserved demand in primary care

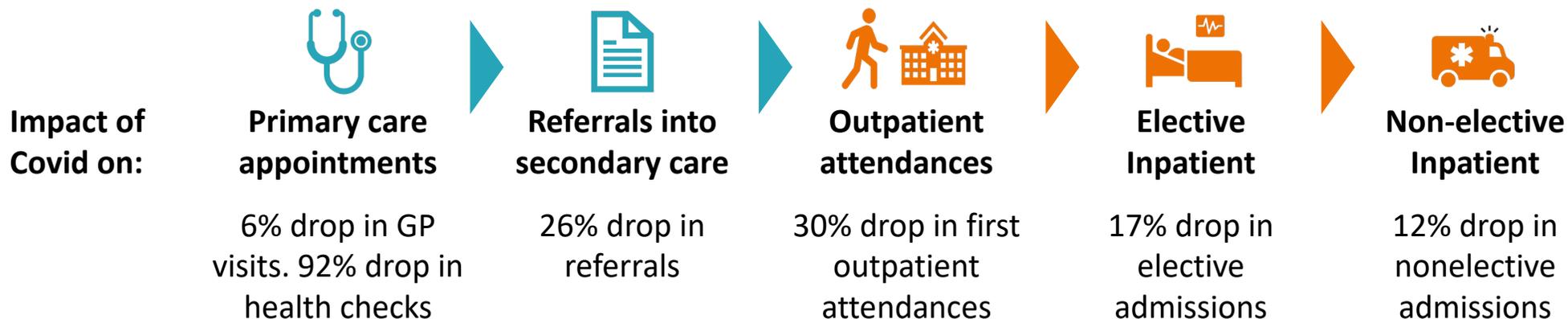
- **If recovery of attendances were in line with the top quartile, 620,000 extra attendances would be taking place per month, a 3% increase**
- If referrals were to increase by 3% above average levels from April – September 2021, **referrals to the listed specialties would rise by 55,500 overall per month**
- Whilst potentially meeting some of the unserved demand in primary care, referrals for new conditions would drive an increase in the backlog for new outpatient attendances

This analysis focusses in on 6 long-term disease areas



When we look at referrals and outpatients, disease specific data does not exist. Speciality-level data has been used in rheumatology, pain clinics, dermatology, ophthalmology, neurology and gastroenterology as a proxy of service recovery

Covid resulted in system disruption and unserved patients. What might be possible in terms of recovering this for these conditions, and how it might be done?



Patients missing from the system

No capacity in secondary care: increasing waiting times

What might be possible in the recovery?

- Recovering in line with 75th percentile STPs would increase GP visits by 620,000 (3%) /month
- This could increase referrals by 650,000 /year in these conditions

Recovering in line with 75th percentile CCGs reduces:

- Unplanned admissions by 27,000 (29%)
- Bed days by 84,000 (24%) /year

Combined, this reduces number of bed days needed overall by 124,000 per year in these 6 conditions

What levers could be used?

- Assistive technologies to find and expedite patients to specialists e.g.,
- Telemedicine pathways
 - Questionnaire-based e-Referrals

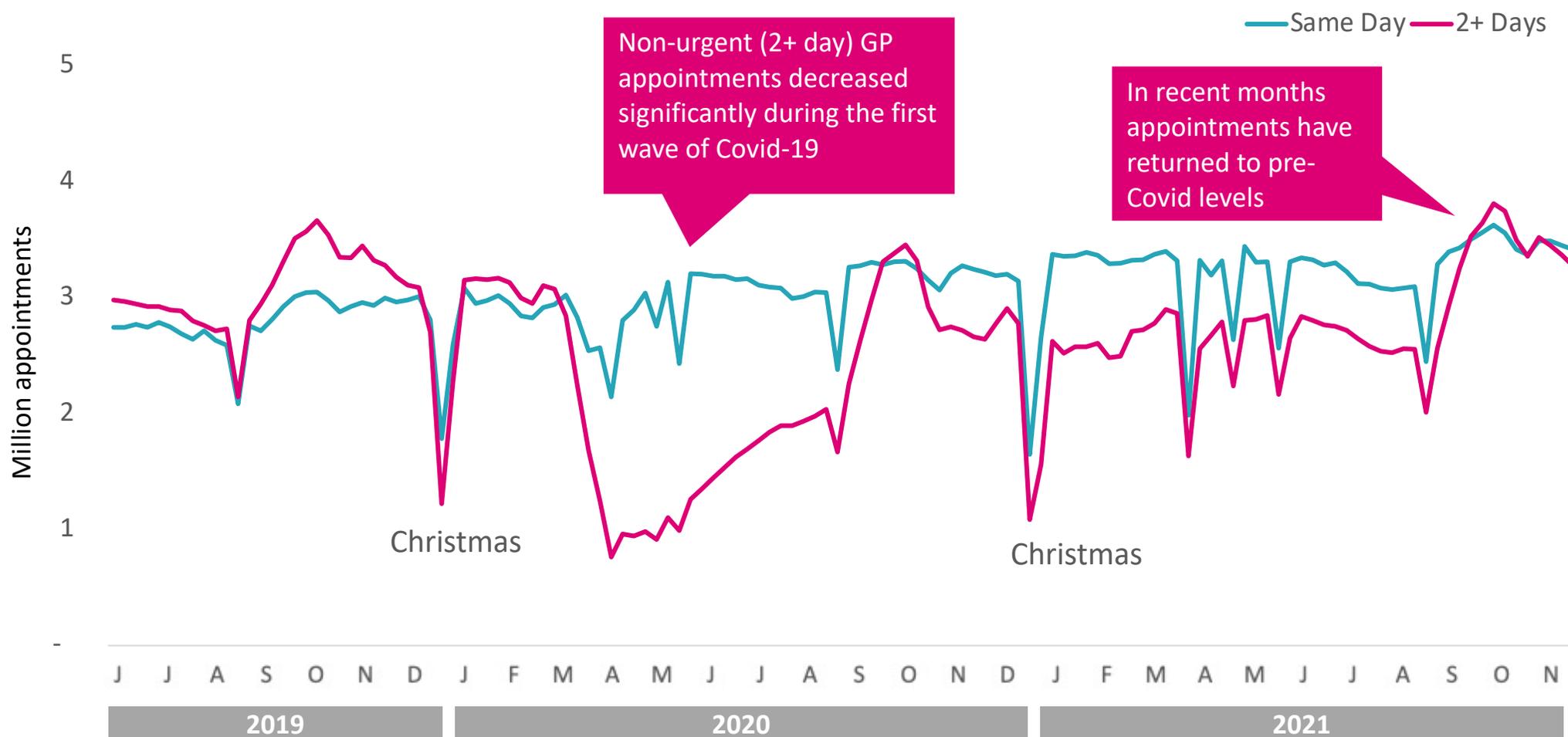
- Effective discharge of patients to community
- Improved secondary prevention e.g.,
 - Remote monitoring and PROMs
 - Specialist community MDTs
 - Switching to simpler drug regimen

This report was commissioned and funded by AbbVie. Research, data analysis and observations were conducted by Carnall Farrar using a mix of publicly-available and proprietary data sources. See Appendix for full references

Data periods used: Jun '19 – Nov '21 for GP data, April – Sept for Health Checks, March '19 – Oct '21 for hospital data

GP appointments dropped by 6%: the drop was driven by a fall in those appointments planned 2 or more days in advance

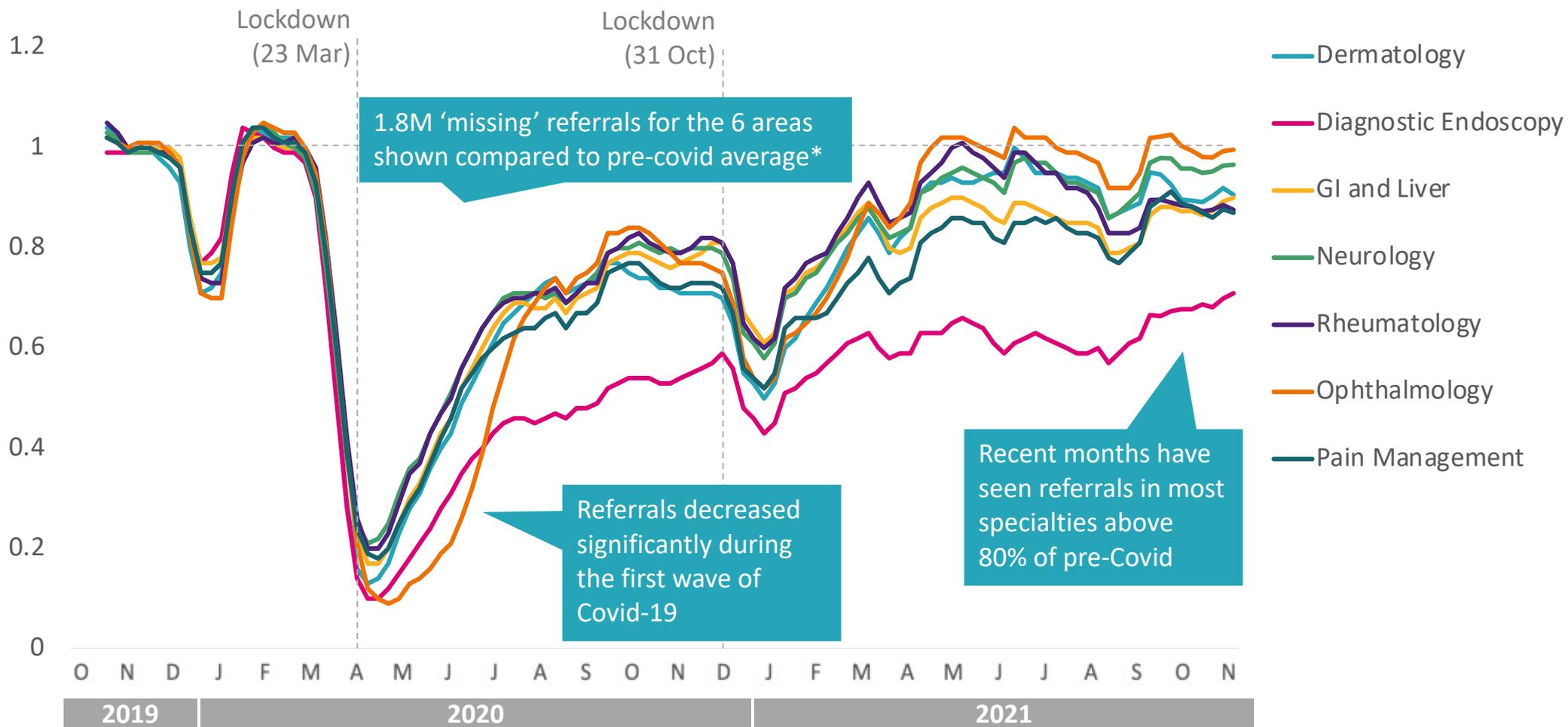
Weekly GP appointment count by time between booking date and appointment date, up to end of November 2021 (excluding Covid-19 vaccinations), Millions



Source: NHS Digital, <https://digital.nhs.uk/data-and-information/publications/statistical/appointments-in-general-practice>

Referrals relative to the pre-Covid period: reduced 26% overall and still remain 7% lower than pre-Covid in November 2021

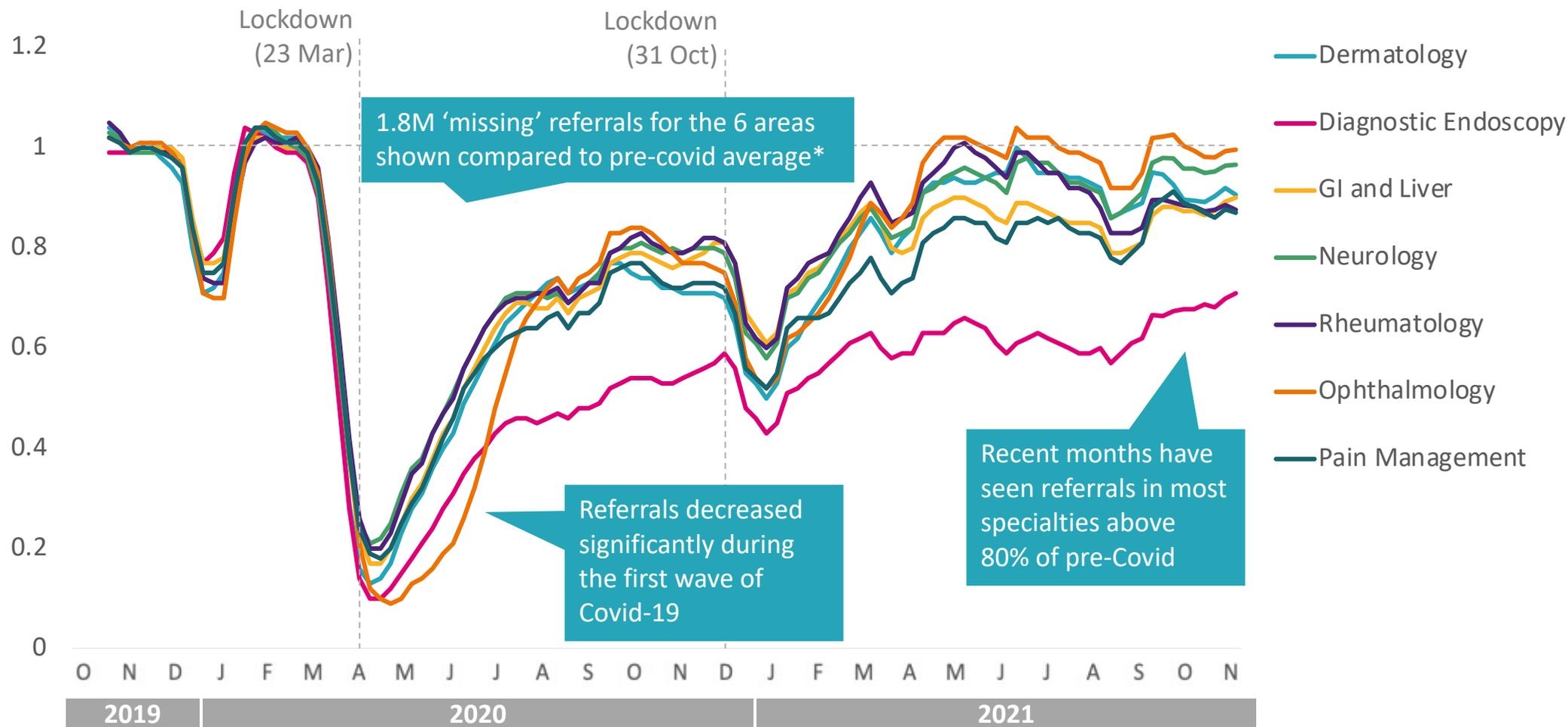
4-week rolling weekly referrals as a percentage of average levels up to 16 March 2020 (excluding Christmas period), 7 Oct '19 – 28 Nov '21



Source: NHS Digital, e-Referrals: <https://digital.nhs.uk/data-and-information/publications/statistical/mi-nhs-e-referral-service-open-data/> This may be an under-estimate given NHSD believe that referrals are not made via the eRS system that the rest of the NHS use – e.g., ophthalmic opticians
 Note – summary headline figures exclude diagnostic endoscopy to reduce double-counting. *The term 'missing' relates to the difference in the number observed vs the number we would expect to see based on the average activity in the pre-COVID period. Excludes diagnostic endoscopy.

1.8M referrals 'missing' in 6 long term conditions relative to the pre-Covid average

4-week rolling weekly referrals as a fraction of average levels up to 16 March 2020 (excluding Christmas period),
7 Oct '19 – 28 Nov '21



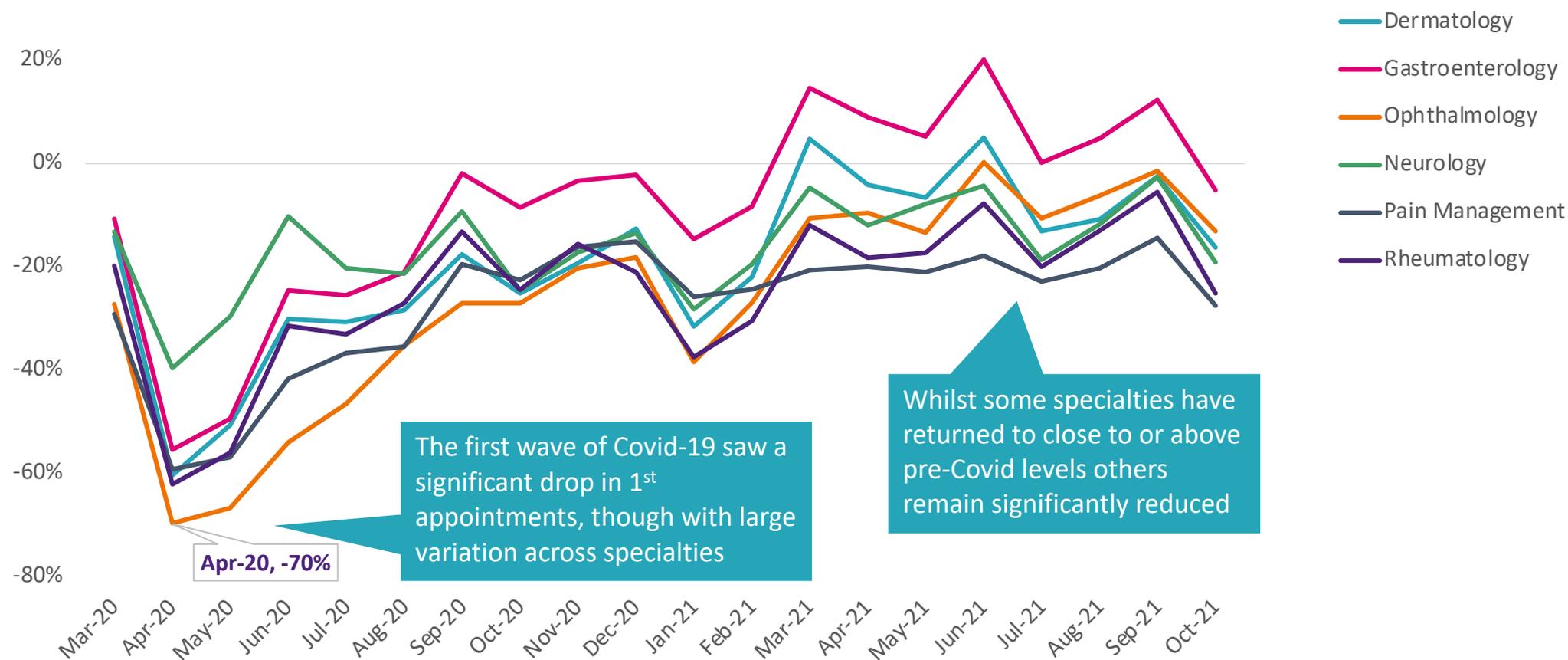
Source: NHS Digital, e-Referrals: <https://digital.nhs.uk/data-and-information/publications/statistical/mi-nhs-e-referral-service-open-data/>.

Note – summary headline figures exclude diagnostic endoscopy to reduce double-counting. *The term 'missing' relates to the difference in the number observed vs the number we would expect to see based on the average activity in the pre-Covid period. Excludes diagnostic endoscopy.

Percentage reduction in first outpatient attendances compared to the same months in 2019: particularly stark in April and May 2020

Percentage reduction in first outpatient attendances for March 2020 - October 2021 compared to the same months in 2019, England

Splitting the period down month by month and looking relative to the same month one year prior, first outpatient attendances saw the most dramatic decline in April and May 2020 relative to 2019. For example, first outpatient attendances (those in the process of diagnosis) for ophthalmology dropped by 70% in April 2020 compared to April 2019

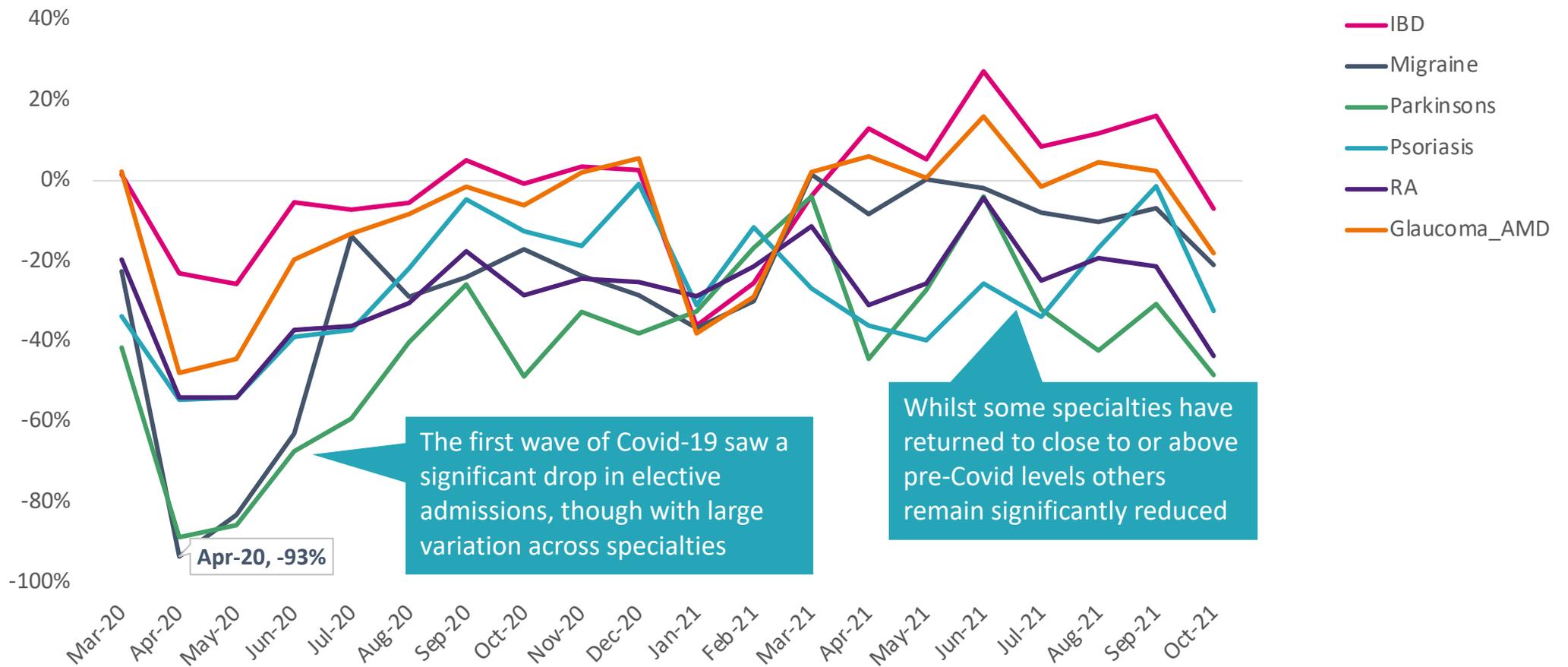


Source: NHS Hospital Episode Statistics for Outpatient activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-outpatient-activity>, CF analysis
 'First' outpatient attendances are those flagged as the initial visit for a particular condition, as opposed to a subsequent/follow-up attendance

Percentage reduction in elective hospital admissions compared to the same months in 2019: particularly stark in April and May 2020

Percentage reduction in elective hospital admissions for March 2020 to October 2021 compared to the same months from 2019, England

Splitting the period down month by month and looking relative to the same month in 2019, elective admissions saw the most dramatic decline in April and May 2020 relative to 2019. For example, elective admissions for migraine dropped by 93% in April 2020 compared to April 2019.

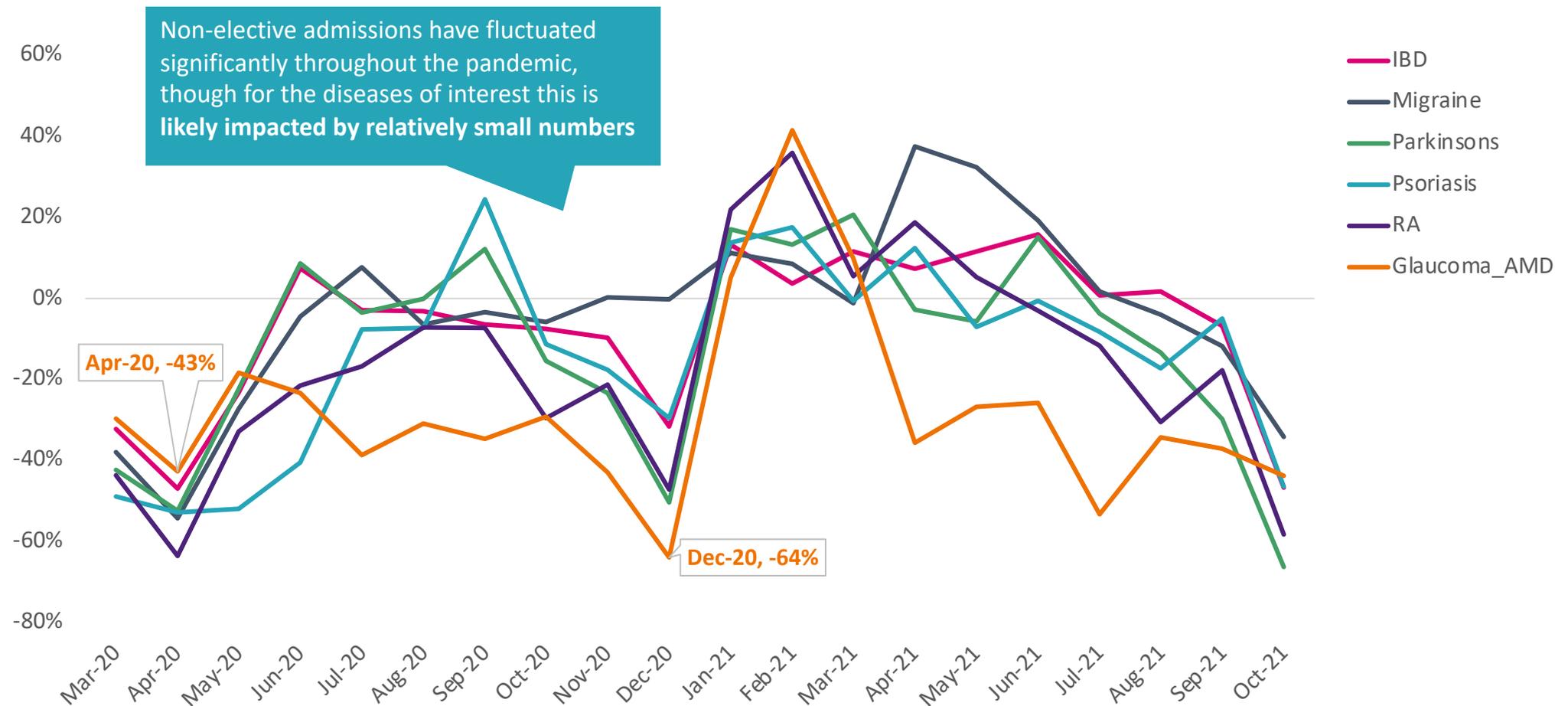


Source: NHS Hospital Episode Statistics for Admitted Patient Care activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity>, CF analysis'

Percentage reduction in non-elective hospital admissions compared to the same months in 2019: particularly stark in April and December 2020

Percentage reduction in non-elective admissions for March to October 2021 compared to the same months from 2019 by month, England

Splitting the period down month by month and looking relative to the same month in 2019, non-elective admissions saw the most dramatic decline in April and December 2020 relative to 2019. For example, non-elective admissions for Glaucoma dropped by 64% in December 2020 compared to December 2019.

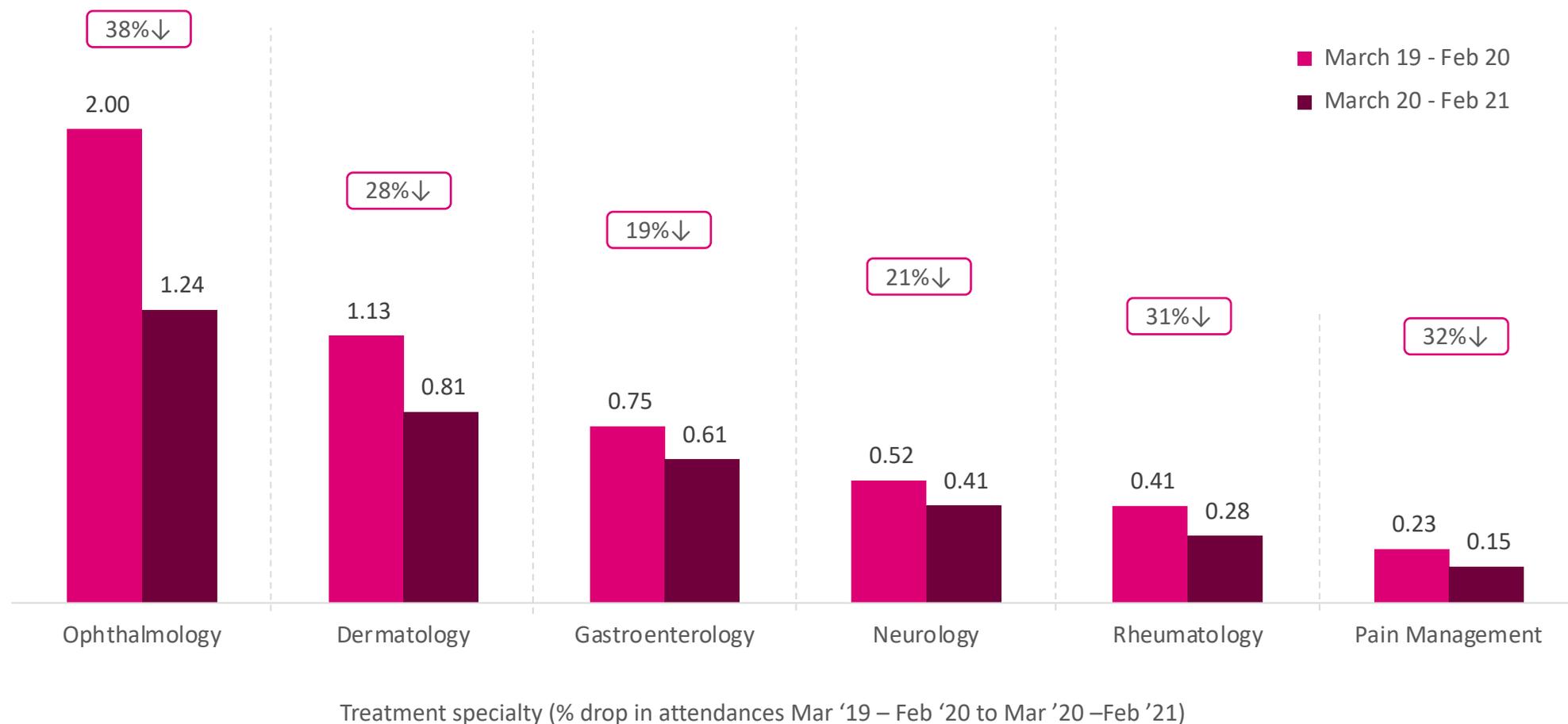


Source: NHS Hospital Episode Statistics for Admitted Patient Care activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity>, CF analysis

A huge amount of 'missing' first outpatient attendances is indicated by the volume relative to 2019: 19-38% decline

First Outpatient Attendances for March 19 – Feb 20 and March 20 – Feb 21 and percentage reduction, England, millions

First outpatient attendances saw a particular decline, of 30% overall, dropping by 19-38% across relevant treatment specialties relative to the year pre-Covid. This captures individuals entering the health system for the first time and seeking a diagnosis and therefore enables us to see the potential impact on missed or late diagnosis.



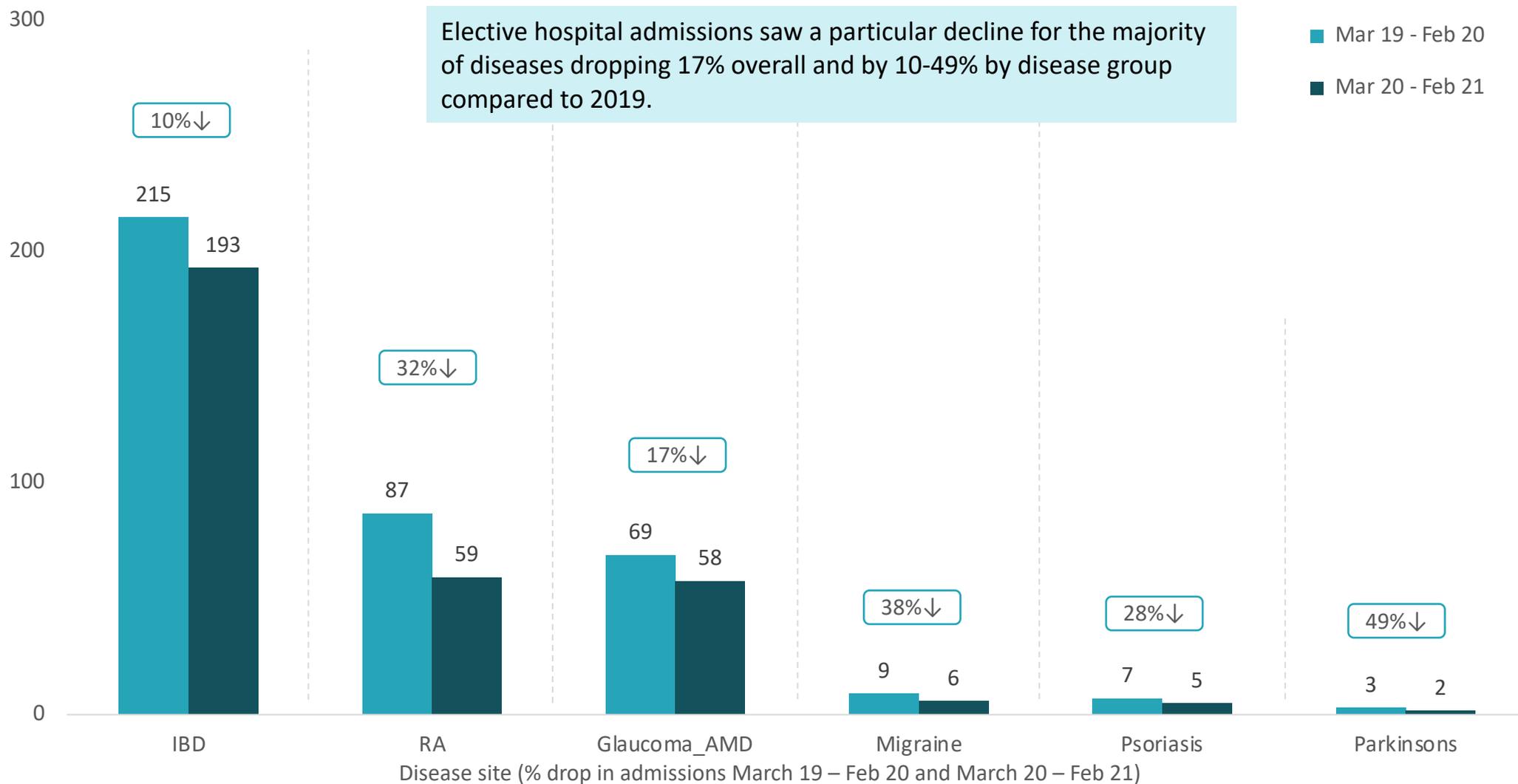
Source: NHS Hospital Episode Statistics for Outpatient activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-outpatient-activity>, CF analysis

'First' outpatient attendances are those flagged as the initial visit for a particular condition, as opposed to a subsequent/follow-up attendance.

Note: for some diseases, including dermatology and rheumatology, physical examination is important for diagnosis. Of interest, in gastroenterology, only 1% of subsequent appointment volume appeared to be missing.

A large number of 'missing' elective hospital admissions is indicated by the drop in volume by 17% overall and 10-49% by disease group compared to the year pre-Covid

Elective hospital admissions for March 19 – Feb 20 and March 20 – Feb 21 and percentage reduction, England (including only the primary diagnosis field; daycase and overnight admitted patient care), thousands



Source: NHS Hospital Episode Statistics for Admitted Patient Care activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity>, CF analysis

At a system level, there are two competing problems for the NHS emerging from COVID; but one must take precedence to avoid deepening the crisis

Lack of capacity in hospital care

- There is **no excess capacity** in outpatients, or elective and non-elective inpatients
- There is a **backlog of referred and elective patients** who were not seen during the pandemic
- Assuming no additional capacity i.e., **if resources stay the same, ways to tackle this include to:**
 - **Increase the available bed days** by reducing admissions and length of stay
 - **Increase clinic capacity** by reducing episodes and making efficiencies where possible e.g., through technology or combined clinics
- Best way to evaluate and tackle this issue is at the disease pathway level

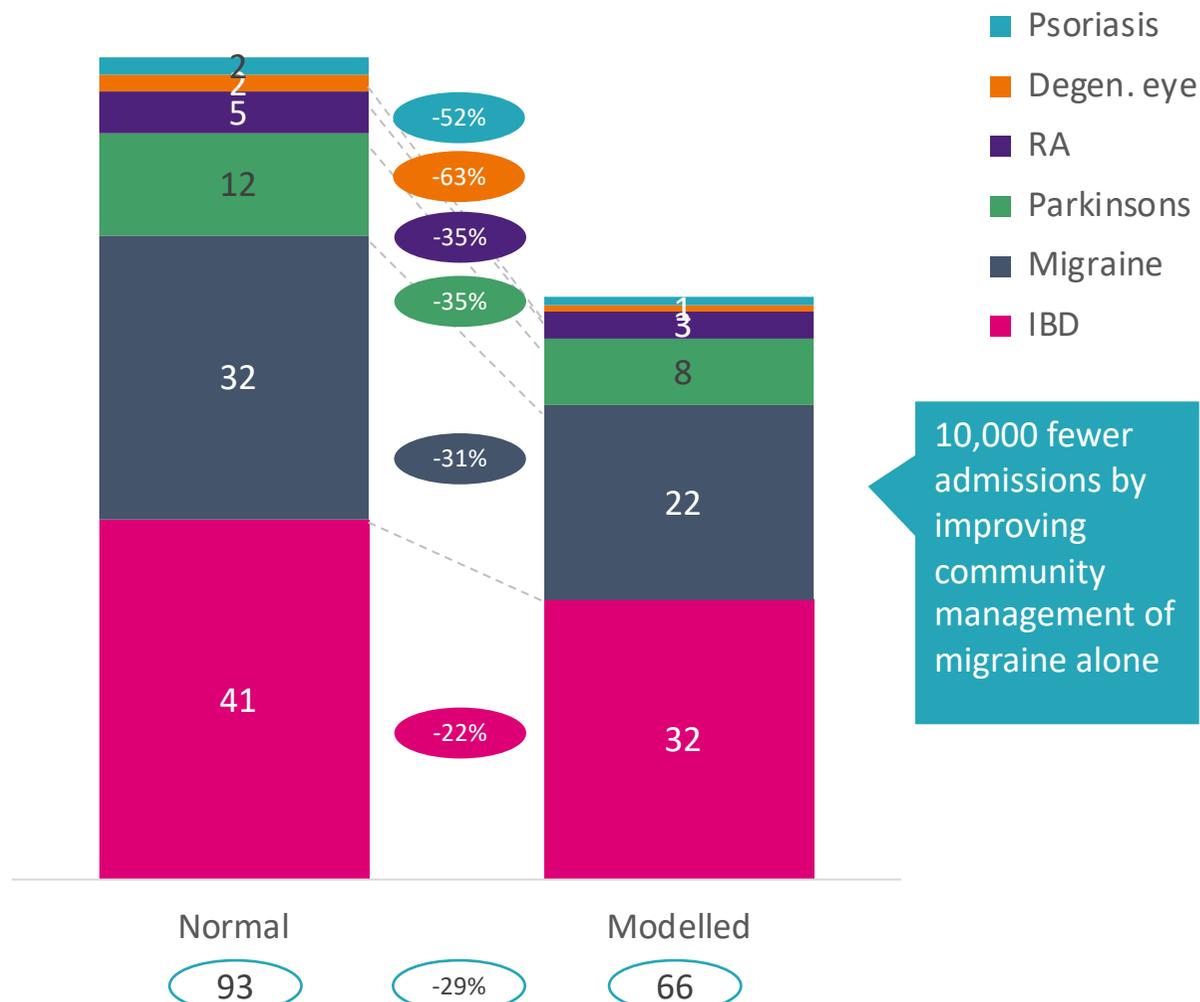
Unserviced demand in primary care

- **Unserviced demand in primary care** due to GP avoidance or inadequate assessment from phone appointments
- To unlock this demand, it will be important to focus on the most at-risk areas to encourage presentation and **fast-track concerning cases to the right treatment pathway**
- However, this **demand bubble threatens to increase and further overwhelm hospital care** due to:
 - Later-stage advanced presentations potentially requiring hospitalisation
 - Historic backlog of referrals presenting at same time as new presentations

While both problems are important to solve, it is critical to create additional capacity in secondary care as a priority to enable both problems to be solved effectively

Improving community disease management for these 6 conditions in line with the '25th percentile' of CCGs could result in up to 27,000 fewer unplanned admissions (29% of total)

'Normal' and modelled nonelective admissions per year, thousands



Description:

- The modelled scenario shows what would happen if the **75% of CCGs with highest nonelective admissions rates in those conditions** (year prior to Covid) **reduced their rates in line with the 25th percentile** for each condition

Implications:

- Nonelective admissions could be reduced by 29% overall** (from 22% for IBD disease to 63% for glaucoma/AMD)
- Overall, and for IBD, migraine and Parkinson's, **the CCGs with the lowest admissions were slightly less deprived** than the CCGs with highest admissions

Levers of change:

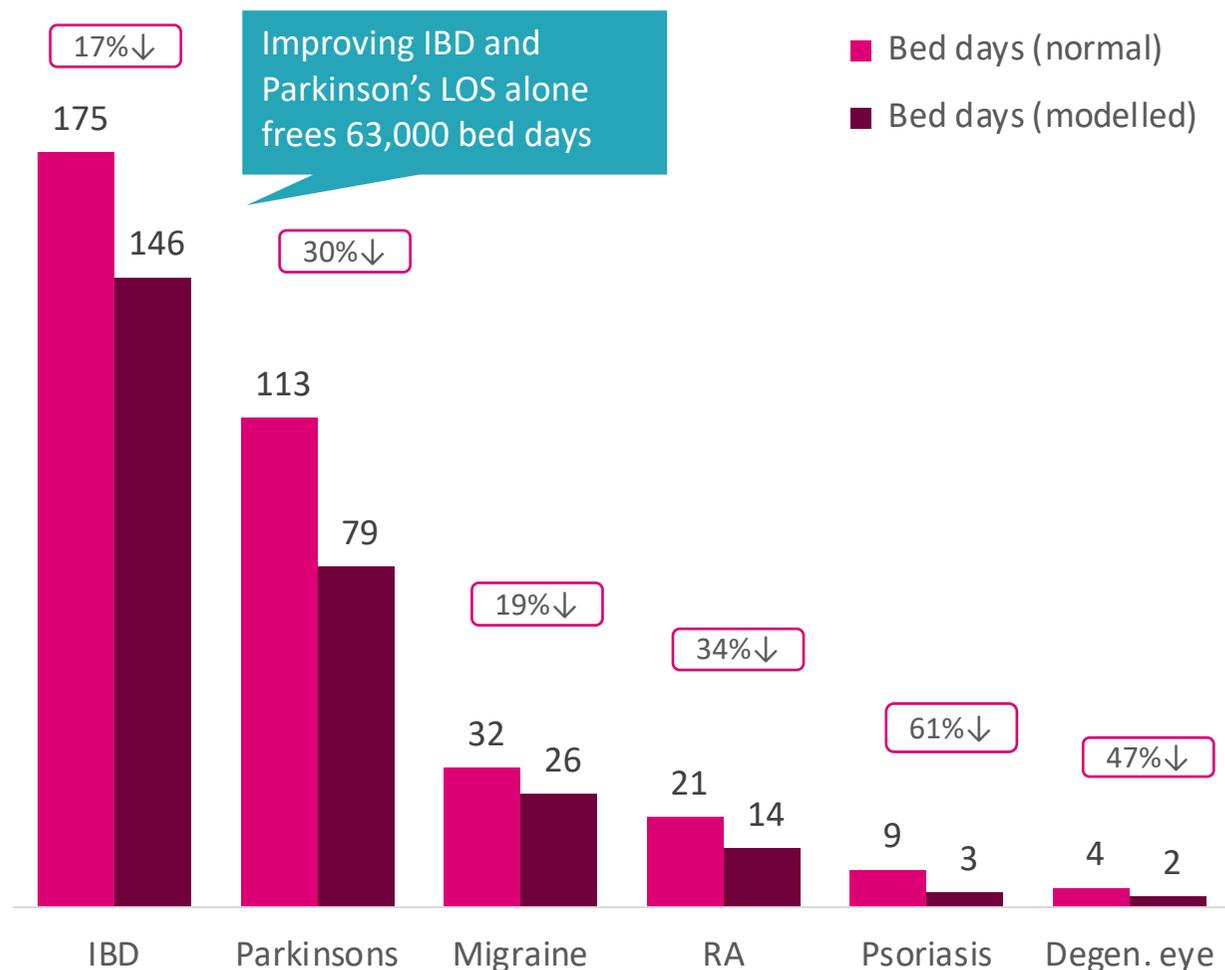
Redesign community pathway to improve secondary prevention e.g.,

- Remote monitoring/ PROMs
- Specialist community MDTs at ICS level
- Switching to simpler drug regimen and delivery outside of secondary care

Source: NHS Hospital Episode Statistics Admitted Patient Care (APC), England; CF analysis. Method: Counts of nonelective admissions in the year prior to Covid-19 (March '19 – February '20), were obtained from HES by CCG. Rates per 100,000 weighted population were calculated to benchmark the CCGs. The modelled scenario calculates the difference if the CCGs in the upper 3 quartiles had the rate of the lower quartile. Degen. eye: glaucoma and macular degeneration. Separate analysis for each of the 6 diseases.

Reducing acute and elective length of stay for these 6 conditions in line with the '25th percentile' of CCGs could result in up to 84,000 (24%) fewer bed days per year

Total **bed days** in steady state and in the scenario where the CCGs with the longest length of stay (LOS) can be reduced to 25th percentile ('000s per year)



Source: NHS Hospital Episode Admitted Patient Care (APC), England; CF analysis. Method: Average length of stay was calculated by CCG and disease in the year prior to Covid-19 (March '19 – February '20). The modelled scenario calculates the difference if the CCGs in the upper 3 quartiles had the LOS of the 25th percentile. Degen. eye: glaucoma and macular degeneration. Separate analysis for each of the 6 diseases.

Description:

- Modelled scenario shows if the **highest 75% of CCGs reduced LOS (in the year prior to Covid) in line with the 25th percentile** in each of these conditions

Implications:

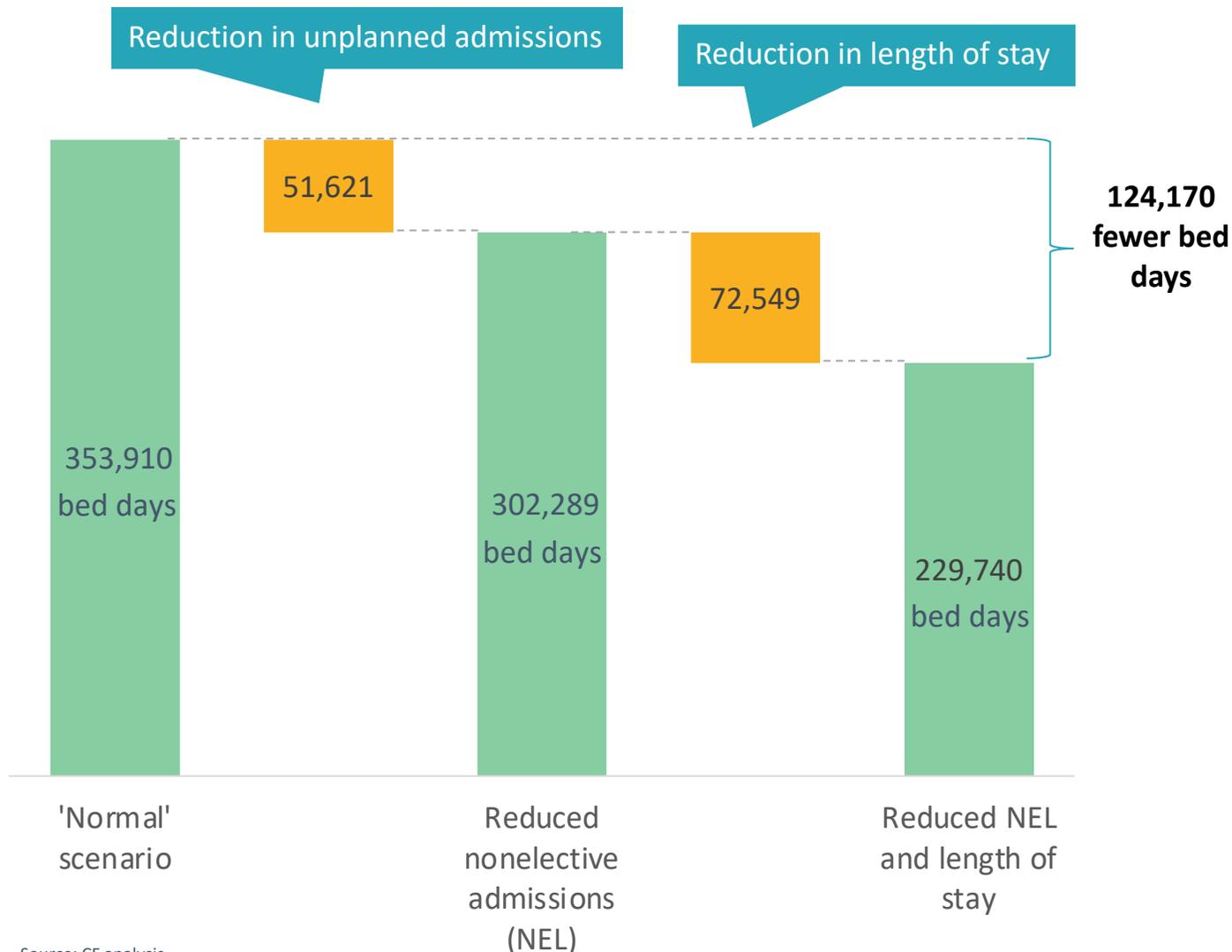
- **Bed days could be reduced by 83,796 (24%)** (19% for migraine to 61% for psoriasis), freeing capacity for recovery
- Overall, and for all diseases except Parkinson's, **the CCGs with the lowest LOS were slightly more deprived** than the CCGs with the highest LOS

Levers of change:

- Community treatment pathway redesign including remote monitoring/ PROMs, aggregated MDTs to ICS level
- Advanced secondary prevention e.g., switching simpler drug regimen and delivery outside of secondary care
- Effective discharge of patients from hospital to community for follow-up

Increase effective capacity by 124,000 bed days by reducing unplanned admissions and reducing length of stay to the 25th percentile

Annual bed days, combining the two modelled scenarios for the 6 conditions



Freed up 'bed' capacity for treating the backlog

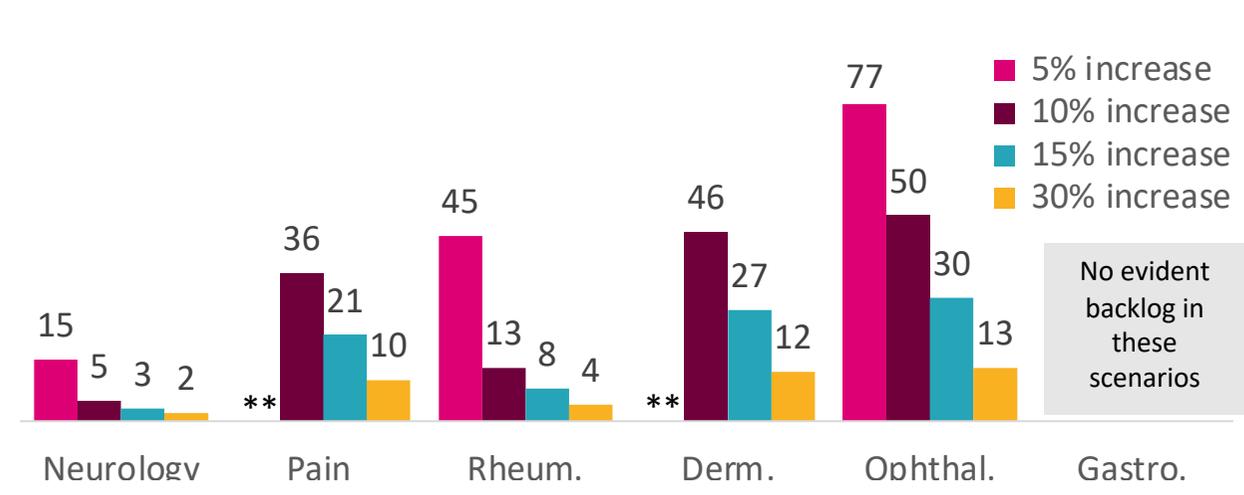
- Reduction of 124,000 bed days per year across England (or 35% of the total)
- Lever: bring elective admissions and LOS for all admissions down, to be in line with the 25th percentile

Source: CF analysis

Method: Combining models from previous 2 slides. Note: EL = elective admissions. NEL = nonelective or unplanned admissions

Recovery rates with different assumptions of what is possible. But limited impact on backlog if capacity increase is only 5% or 10%

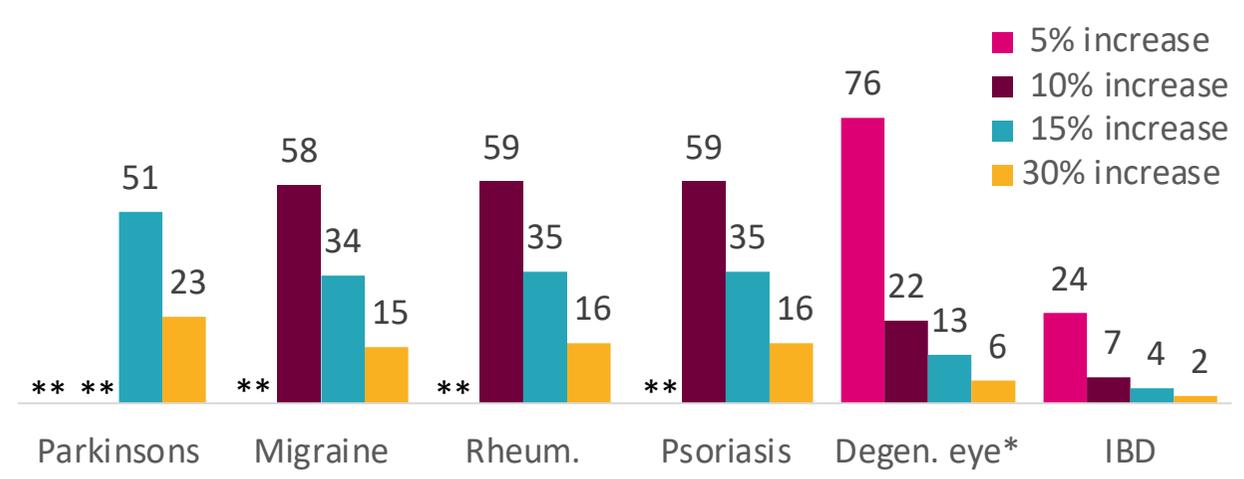
Months to clear the **outpatient** backlog under different capacity scenarios



Description and Implications:

- The 4 modelled scenarios show how long the backlogs would take to clear under different examples of increased capacity (+5%, 10%, 15% and 30%)
- Some conditions face **multi-year backlogs even with 15% capacity increase**

Months to clear the **elective admissions** backlog under different capacity scenarios



For OP gastro activity between March – Oct 2021 was **already higher** than the **average monthly pre-Covid activity**. This means the estimated cumulative backlog was already being worked through, and had in fact 'been cleared' in September 2021

Levers of change:

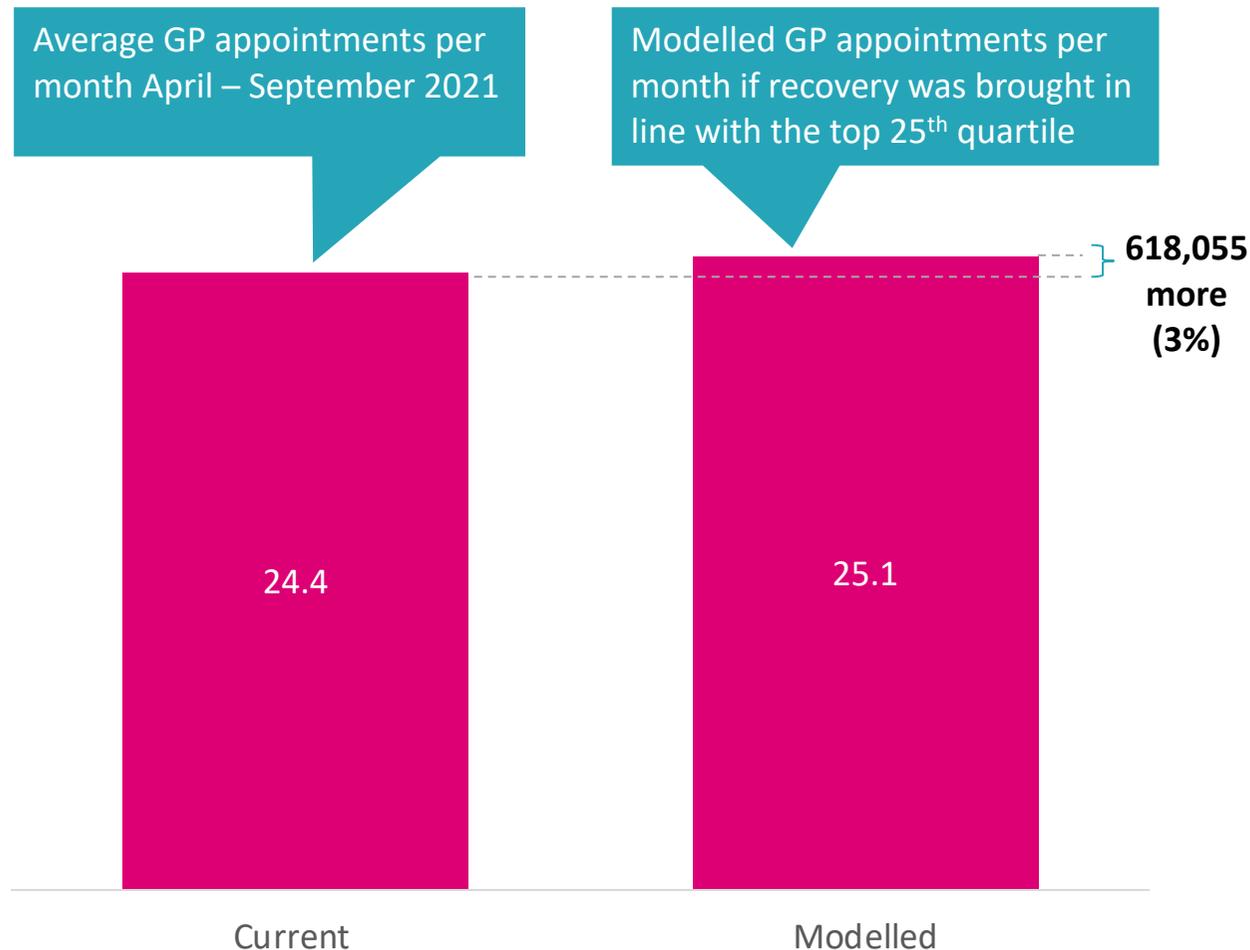
- Shortening LOS and avoiding acute admissions, through secondary prevention, frees up beds for elective care (modelled at 35% of bed days).
- OP throughput could be increased through combined outpatient clinics

Degen. eye: glaucoma and macular degeneration. ** Backlogs will not clear within 84 months (7 yrs.)

Source: NHS Hospital Episode Outpatient and Admitted Patient Care (APC) data, England; CF analysis. Method: Historic pre-Covid activity was used to model expected demand by month and disease using 3% demographic growth and the assumption that only 75% of the missing activity will flow into the backlog because 25% of missed appointment will not need to happen for various reasons e.g., repeat appointments, symptom resolution or death. The modelled scenarios calculate the time to clear the accumulated cumulative backlogs if capacity were increased by 5%, 10%, 15% or 30% above latest levels.

Improving recovery of GP appointments in line with the '25th percentile' of STPs could result in up to 620,000 more GP attendances per month (3% of the total)

Current and modelled GP appointments per month, millions



Description:

- The modelled scenario shows if all STPs increased their recovery of GP attendances to be in line with the 75th percentile
- Recovery was calculated as the average monthly activity for April – September 2021, relative to average monthly activity pre-Covid
- We assume this potential increase in recovery across all causes applies to the six conditions of interest

Implications:

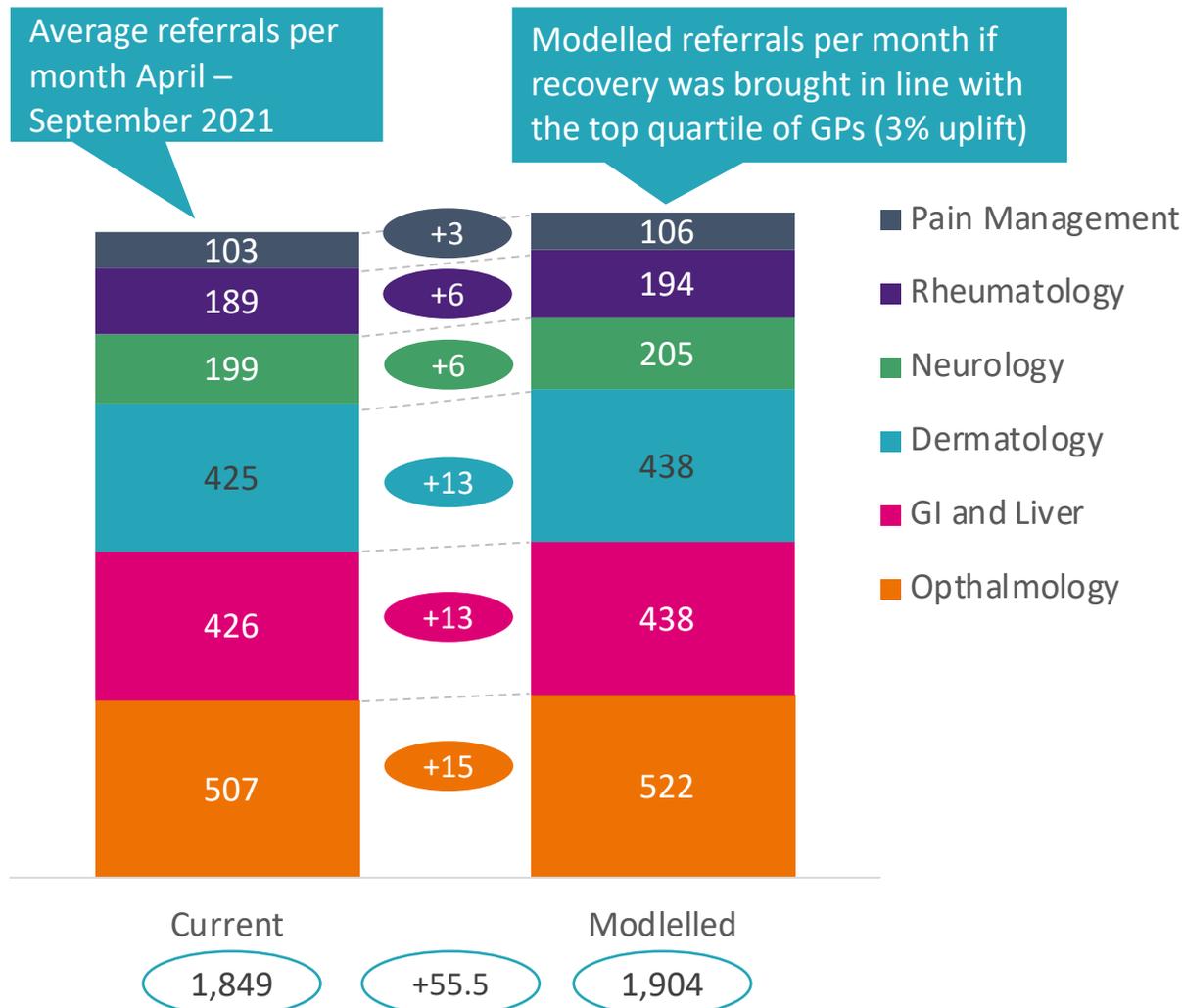
- There is geographic variation in the recovery of appointments
- If recovery of attendances were in line with the top quartile, 620,000 extra attendances would be taking place per month (3.7 million from April – September 2021) - an average of 3% extra

Source: NHS Digital, <https://digital.nhs.uk/data-and-information/publications/statistical/appointments-in-general-practice>

Method: Average appointments per month were calculated for the 'recovery' or current period from Apr 21 - Sep 21. Average appointments per month were calculated for the year prior to Covid. STPs were ranked by the recovery relative to pre-Covid activity. The modelled scenario calculates the difference if the STPs in the upper 3 quartiles had the recovery % of the 75th percentile.

3% increase in GP appointments could increase referrals by over 650,000 per year for the disease areas of interest

Current and modelled referrals per month for disease areas of interest, **thousands**



Description:

- The modelled scenario shows the increase in referrals if the GP recovery rates (modelled previously) were achieved and this **3% increase were to apply to referrals for each of the disease areas of interest**
- The modelled counts show average monthly referrals during the period April – September 2021 (the ‘recovery’ period) uplifted by 3%

Implications:

- If referrals were to increase by 3% above average levels from April – September 2021, **referrals to the listed specialties would rise by 55,500 overall per month**
- Referrals to ophthalmology, GI and liver and dermatology would be highest (15,200, 12,800 and 12,700)
- Referrals for new conditions would drive an increase in the backlog for new outpatient attendances**

Source: NHS Digital, e-Referrals: <https://digital.nhs.uk/data-and-information/publications/statistical/mi-nhs-e-referral-service-open-data/>, referrals from April '21 - September '21 CF analysis. Consistent 3% increase applied to each of the 6 referral groups.

In all, we consider some potential ways of addressing the two problems identified

Lack of capacity in hospital care

- If the **75% of CCGs with highest nonelective admissions rates (in the year prior to Covid) reduced their rates in line with the 25th percentile** for each condition, **Nonelective admissions could be reduced by 29% overall**
- If the **highest 75% of CCGs reduced LOS (in the year prior to Covid) in line with the 25th percentile** for these conditions, **Bed days could be reduced by 83,796 (24%)**, freeing capacity for recovery
- The combination of reducing non-elective admissions and reducing length of stay could save **124,000 bed days**
- **Increasing capacity would impact on the backlogs**, for example moving from a 10% increase in both outpatient and elective admission capacity to 15% cuts backlog by 40%
- However, some conditions face **multi-year backlogs even with 15% capacity increase**

Unserved demand in primary care

- **If recovery of attendances were in line with the top quartile, 620,000 extra attendances would be taking place per month, a 3% increase**
- If referrals were to increase by 3% above average levels from April – September 2021, **referrals to the listed specialties would rise by 55,500 overall per month**
- Whilst potentially meeting some of the unserved demand in primary care, referrals for new conditions would drive an increase in the backlog for new outpatient attendances

Further work must focus on **how** to move to 25th percentile:

- What are top quartile CCGs doing to deliver this level of impact?
- What are the barriers to delivering this impact?
- How can these barriers be overcome?
- What novel pathways or configurations can be developed e.g., use of digital interventions to move systems to 25th percentile performance or above

Appendix

Updated data to November 2021 indicates a rise in GP appointments particularly driven by an increase in face-to-face appointments closer to pre-Covid levels

- Only some months had more **GP attendances** than the pre-Covid average prior to September 2021, though since this has **consistently risen above average with c.30 million appointments in November 2021**, compared to a pre-Covid average of c.25.5 million per month
- Though weekly rates continue to fluctuate, these are also consistently above pre-Covid levels having **risen strongly in September before appearing to stabilise somewhat from mid-October**
- The drop in GP appointments that was seen was largely driven by a fall in appointments **planned 2 or more days in advance, which have more recently significantly increased in line with same day appointments to return close to pre-Covid levels**
- The number of GP appointments carried out face-to-face has not yet reached pre-Covid levels, though has increased significantly between September and November 2021, with **65% of appointments carried out face-to-face in November**. The increase in digital has continued to supplement the fall in face-to-face though appears to have stabilised
- The **proportion of GP appointments not attended has remained lower than pre-Covid**, although peaked in October 2020 and 2021, and appears to have returned closer to pre-Covid averages
- **Referrals relative to the pre-Covid period: reduced by 26% overall during the first wave, and still remained 7% lower than pre-Covid in November 2021**. Some specialties such as Diagnostic Endoscopy have seen a slower rate of recovery and remain significantly further below pre-Covid levels, whilst others such as **ophthalmology and neurology saw 4-week rolling averages of over 95% of pre-Covid levels between September and November 2021**

Hypotheses improving system recovery across 6 LTCs

These 6 hypothesis were tested by Carnall Farrar during the research:

1. **Missing patients** - There has been a significant recovery of GP services and referrals. Some individuals have not come forward, and some individuals have not got an appointment to see GP
2. **Suboptimal symptom identification** - There has been a rise in telephone GP appointments, but these are not ideal for diagnosing all conditions, resulting in low diagnosis rates over telephone
3. **Lack of elective recovery** – Outpatient and admitted patient care (APC) services are broadly back to pre-pandemic levels but there is a waiting list not being worked through
 - i. **Connected comorbidities** - Some individuals have connected comorbidities and are seen in separate outpatient clinics for their conditions
 - ii. **Suboptimal use of digital outpatient services** – there has been a significant increase in virtual care during the pandemic but the optimal use ceiling has not necessarily been reached
4. **Secondary/tertiary prevention** – Patients could be better managed in the community, for example through community MDTs for those with complex needs, and more effective discharge

At a system level, there are competing problems for the NHS emerging from COVID, **Lack of capacity in hospital care** and **Unserved demand in primary care**. While both are important to solve, it is critical to create additional capacity in secondary care as a priority to enable both to be solved effectively

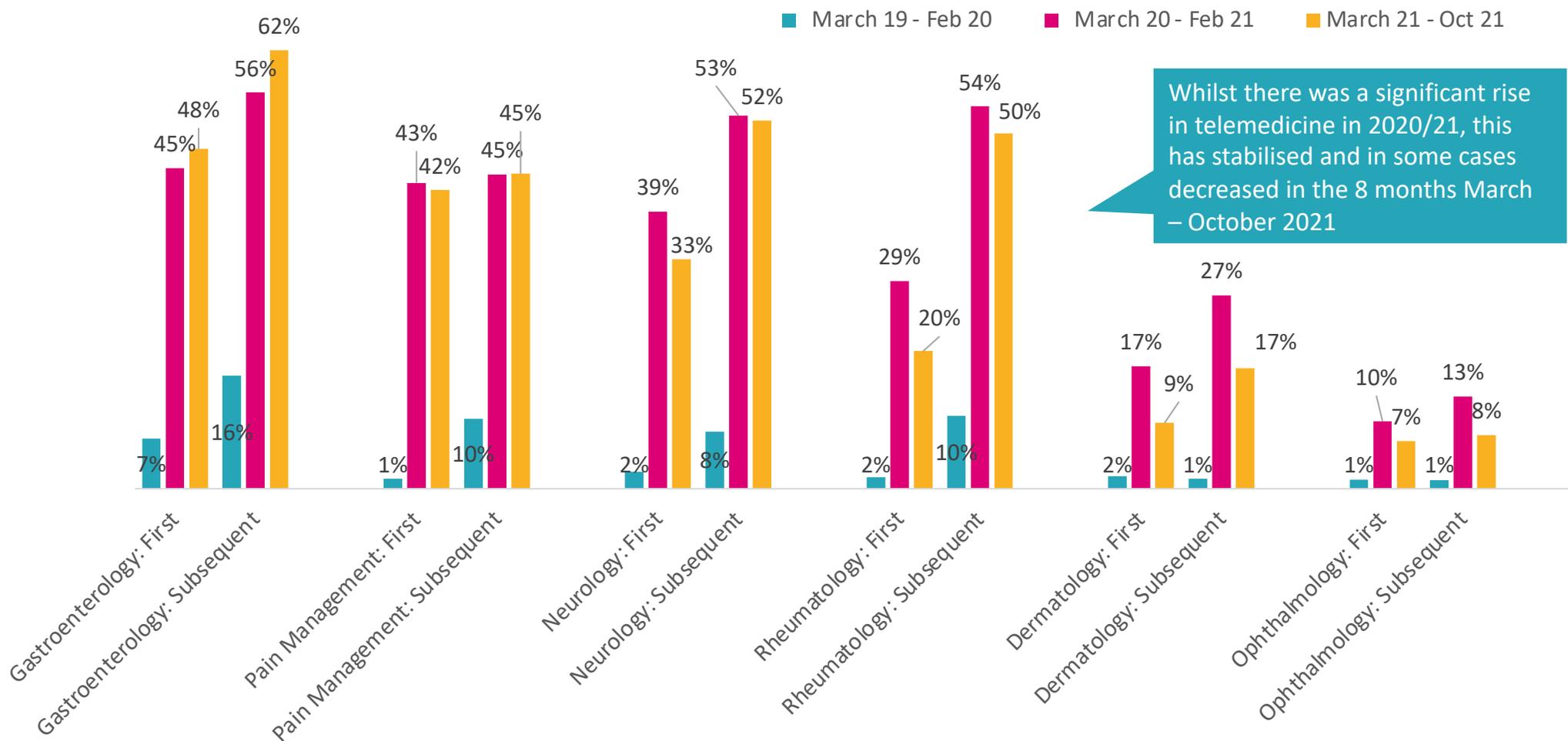
Impact of levers on hospital capacity and primary care demand

- **Improving community disease management** in line with the '25th percentile' of CCGs could result in up to **27,000 fewer unplanned admissions** (29% of total). This includes working to Redesign community pathway to improve secondary prevention e.g., Remote monitoring/ PROMs; Specialist community MDTs at ICS level; Switching to lower dosing frequency and delivery outside of secondary care
- **Reducing acute and elective length of stay** in line with the '25th percentile' of CCGs could result in up to **84,000 (24%) fewer bed days per year**. This could be achieved through Community treatment pathway redesign.
- If it is assumed that these **levers could increase capacity by 15%, a reasonable recovery rate is seen**. But limited impact on backlog if capacity increase is only 5% or 10%
- If **patients with linked conditions could be seen in combined clinics, this would have a small impact on overall clinic numbers**, but potentially a large impact on the number of attendances per patient for these patients
- **Improving recovery of GP appointments** in line with top quartile STPs could result in up to **620,000 more GP attendances per month** (3% of the total)
- 3% increase in GP appointments **could increase referrals by over 650,000 per year** for the disease areas of interest

Mode of delivery of outpatient appointments: a shift towards telephone and telemedicine from 2019 to 2020 with some reduction in 2021

Proportion of outpatient attendances that were recorded as telephone/telemedicine, March 20-Feb 21 compared to March 19-Feb 20; and the trend in the first 8 months of 21/22 (with diseases ordered from high to low for 2020 proportion of first appointments)

First attendances show patients in the diagnostic process. A lower proportion of first attendances were via telemedicine, perhaps showing the need for physical assessment during the diagnostic process.

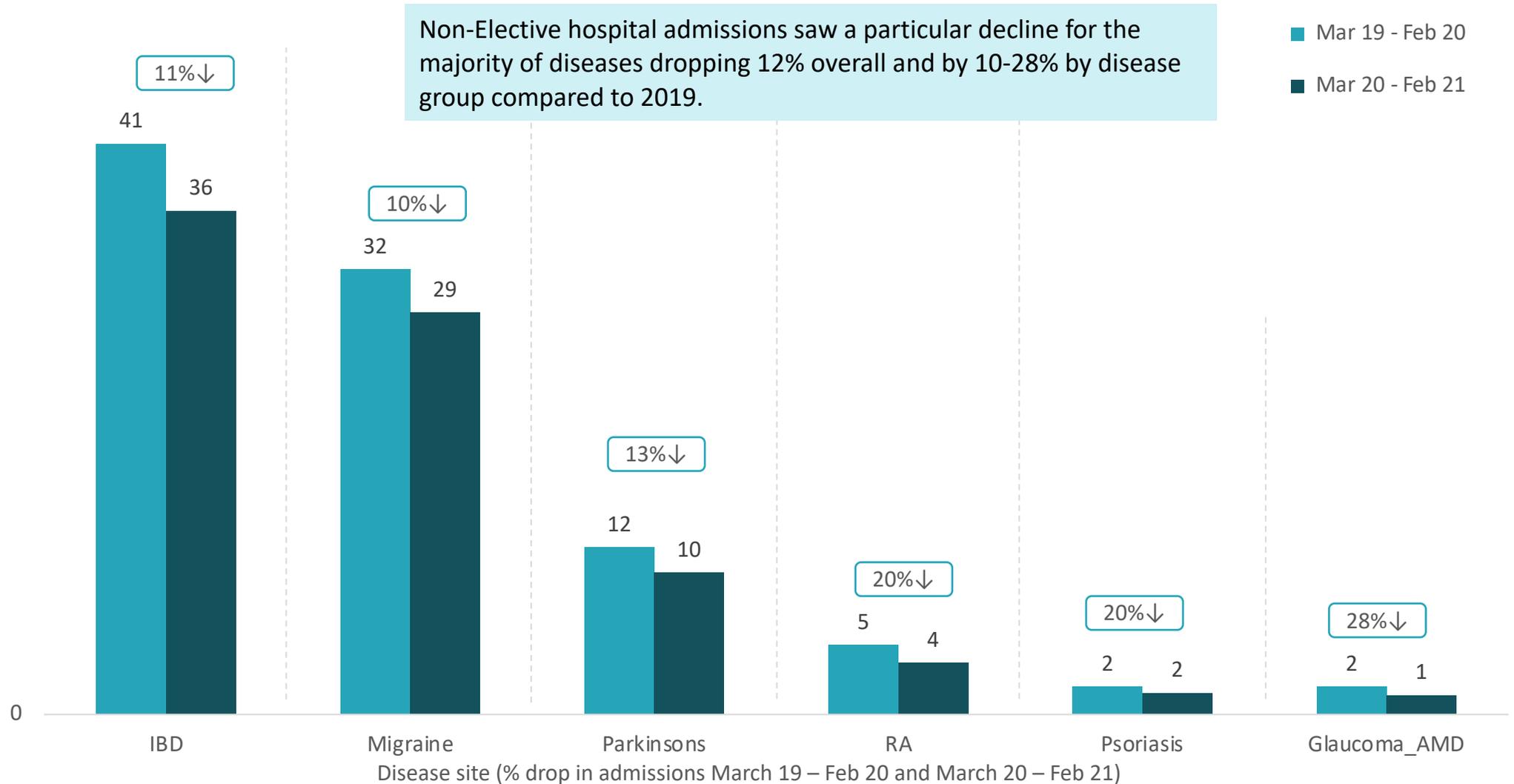


Note: the most appropriate level of usage of virtual care may vary by disease type

Source: NHS Hospital Episode Statistics for Outpatient activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-outpatient-activity>, CF analysis

Nonelective hospital admissions: dropped 10 to 28% across disease areas compared to the year pre-Covid

Non-Elective hospital admissions for March 19 – Feb 20 and March 20 – Feb 21 and percentage reduction, England (including only the primary diagnosis field; daycase and overnight admitted patient care), thousands



Source: NHS Hospital Episode Statistics for Admitted Patient Care activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity>, CF analysis

Covid-19 has resulted in disruption across the healthcare system, with disruption varying by disease

Wave 1 (March – May 2020 vs March – May 2019)

Disease	Incidence (UK)	Treatment specialty	GP drop (all diseases)*	Referral drop**	First OP drop	Subsequent OP drop	Elective admission drop	Nonelective admission drop
Migraine	1,660,900	Pain management		57%	48%	42%	67%	39%
Glaucoma/AMD	703,000/ 590,000	Ophthalmology		65%	54%	47%	31%	31%
Psoriasis	86,000	Dermatology	28%	61%	42%	40%	47%	51%
RA	25,000	Rheumatology		53%	46%	16%	42%	46%
IBD	19,000	GI/Liver / Gastroent.		57%	39%	24%	16%	34%
Parkinson's	18,000	Neurology		55%	27%	11%	73%	39%
Total		Total	28%	59%	45%	36%	27%	37%

Recovery 1 (June – August 2020 vs June – August 2019)

Disease	Incidence (UK)	Treatment specialty	GP drop (all diseases)*	Referral drop**	First OP drop	Subsequent OP drop	Elective admission drop	Nonelective admission drop
Migraine	1,660,900	Pain management		37%	38%	20%	35%	1%
Glaucoma/AMD	703,000/ 590,000	Ophthalmology		44%	45%	38%	14%	32%
Psoriasis	86,000	Dermatology	16%	34%	30%	31%	33%	19%
RA	25,000	Rheumatology		31%	31%	1%	35%	15%
IBD	19,000	GI/Liver / Gastroent.		35%	24%	-1% (above pre-Covid)	6%	0%
Parkinson's	18,000	Neurology		31%	17%	-6%	56%	-1%
Total		Total	16%	36%	34%	24%	16%	2%

Negative numbers indicate a difference above pre-Covid levels

*Figures for the drop in primary care (GP appointments) cover all disease areas, not just the six of interest and compare the monthly averages for the selected period to the monthly average for June 2019 to February 2020

**Figures for the drop in referrals and outpatient attendances use data from the treatment specialty groups listed. Outpatient analysis compares the selected period to the weekly average for October 2019 to February 2020

Sources: Incidence estimates - see slide 20

GP data - NHS Digital, <https://digital.nhs.uk/data-and-information/publications/statistical/appointments-in-general-practice> Referrals data - NHS Digital, e-Referrals: <https://digital.nhs.uk/data-and-information/publications/statistical/mi-nhs-e-referral-service-open-data/>

Outpatient data - NHS HES for Outpatient activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-outpatient-activity> (CF analysis - not publicly available data)

Admissions data - NHS Hospital Episode Statistics for Admitted Patient Care activity: <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity> (CF analysis - not publicly available data)

Sources of incidence estimates

Disease	Incidence (UK)	Incidence source	Quote	Link
Migraine	1,660,900	Seven studies used Silberstein–Lipton criteria, with prevalence from 0.9% to 5.1%. Three estimates used migraine that occurred ≥ 15 days per month, with prevalence from 0 to 0.7%.	“The prevalence of CM was 0–5.1%, with estimates typically in the range of 1.4–2.2%”	https://journals.sagepub.com/doi/10.1111/j.1468-2982.2009.01941.x
Glaucoma/AMD	703,000 590,000	Meta-analysis applied to UK 2007–09 population data	“The prevalence of late AMD in the UK among people aged 50 years or over is 2.4%” “Primary open angle glaucoma (POAG) affects about 2% of people in the UK older than 40 years”	https://cks.nice.org.uk/topics/glaucoma/background-information/prevalence/
Psoriasis	86,000	Incidence, prevalence and mortality of patients with psoriasis: a U.K. population-based cohort study (2017)	“adjusted psoriasis incidence ...129 per 100 000 person years (95% CI 126–133) in 2013”	https://pubmed.ncbi.nlm.nih.gov/27579733/
RA	25,000	Rheumatoid arthritis is getting less frequent—results of a nationwide population-based cohort study (2017)	“The incidence and prevalence of RA was 3.81/10 000 person-years and 0.67%, respectively, in 2014.”	https://pubmed.ncbi.nlm.nih.gov/28064207/
IBD	19,000	Incidence and prevalence of inflammatory bowel disease in UK primary care: a population-based cohort study (2020)	“Crude incidence estimates of ‘IBD overall’ ...28.6”	https://bmjopen.bmj.com/content/10/7/e036584
Parkinson's	18,000	The incidence and prevalence of Parkinson's in the UK (2018)	“estimated incidence of Parkinson's for people aged 45 or over 2018 is 18,461”	https://www.parkinsons.org.uk/sites/default/files/2018-01/CS2960%20Incidence%20and%20prevalence%20report%20branding%20summary%20report.pdf

References:

UK pop in 2018 = 66,436,000 (<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/august2019>)

UK pop in 2018 aged 45+ years = 29,314,000 (<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/august2019>)

Our analysis focuses on six initial hypotheses and proposed levers

Issues	What could be done?	Expected outcomes to model
<p>1 Missing patients - There has been a significant recovery of GP services and referrals. Some individuals have not come forward, and some individuals have not got an appointment to see GP</p>	Encouraging patient presentation to primary care	<ul style="list-style-type: none"> • Increase in GP attendances and referrals • Increase in size of outpatient waiting list • Knock-on effects through pathway
<p>2 Suboptimal symptom identification - There has been a rise in telephone GP appointments, but these are not ideal for diagnosing all conditions, resulting in low diagnosis rates over telephone</p>	Improved symptom identification during phone appointments through development of an app	<ul style="list-style-type: none"> • Increase in referrals • Increase in size of outpatient waiting list • Knock-on effects through pathway
<p>3 Lack of elective recovery – Outpatient and admitted patient care (APC) services are broadly back to pre-pandemic levels but there is a waiting list not being worked through</p>	Increasing outpatient and elective throughput to over pre-pandemic levels (e.g., 100% / 105% / 110%)	<ul style="list-style-type: none"> • Increase in outpatient attendances and elective admissions • Reduction of waiting list
<p>4 Sub-issue - Connected comorbidities - Some individuals have connected comorbidities and are seen in separate outpatient clinics for their related conditions (not Covid-specific)</p>	Better use combined clinics for those with connected comorbidities e.g., rheum/derm services for those with psoriatic arthritis and psoriasis	<ul style="list-style-type: none"> • Decrease in number of outpatient attendances for people with relevant comorbidities
<p>5 Sub-issue - Suboptimal use of digital outpatient services – there has been a significant increase in virtual care during the pandemic but the optimal use ceiling has not necessarily been reached</p>	Shift to digital/virtual outpatient attendances, where appropriate, and video where possible	<ul style="list-style-type: none"> • Increase in telemedicine outpatient attendances (if not plateaued) and decrease in face-to-face
<p>6 Secondary/tertiary prevention – Patients could be better managed in the community, for example through community MDTs for those with complex needs, and more effective discharge</p>	Patients could be kept out of secondary care. There is potentially an opportunity to benefit patients through more optimal use of existing drugs	<ul style="list-style-type: none"> • Decrease in exacerbation (in the community) and nonelective admission • Decrease in length of stay for admissions • Decrease in nonelective admissions



Rheumatoid Arthritis

- **Referrals** decreased significantly during the **first wave of Covid-19, dropping to around 20% of pre-pandemic** levels for Rheumatology. Recovery has been gradual with rheumatology referrals reaching **c. 88% of pre-pandemic levels in October and November 2021**
- The first wave of Covid-19 saw a **significant drop in 1st outpatient appointments** (those in the process of diagnosis), with those for rheumatology **dropped by 62% in April 2020** compared to April 2019. By September and October 2021 this remained significantly reduced compared to pre-Covid levels with **6% below in September 2021 and a fall to 25% below in October 2021**
- A similar pattern is seen in **elective hospital admissions** which for Rheumatoid Arthritis **dropped by about 54% in the first wave** and remain around 40% below pre-Covid levels in the second half of 2021
- In total the **first year of the pandemic (March 2020 to February 2021) saw 31% less first outpatient attendances** for rheumatology than the year prior to the pandemic, and rheumatoid arthritis saw 32% less elective hospital admissions
- Improving community disease management for rheumatoid arthritis in line with the '25th percentile' of CCGs could result in **up to 2,000 fewer unplanned admissions** (35% of total)
- Reducing acute and elective length of stay for rheumatoid arthritis in line with the '25th percentile' of CCGs could result in **up to 7,000 (34%) fewer bed days per year**
- There is a reasonable recovery rate in outpatient backlog for rheumatology and elective admission backlog for rheumatoid arthritis if we assume half that capacity increase (15%) is possible though these remain significant, at 8 months and 35 months respectively



Migraine

- **Referrals** decreased significantly during the first wave of Covid-19, **dropping to around 18% of pre-pandemic levels for pain management**. Recovery has been gradual with pain management referrals reaching c. **87% of pre-pandemic levels in October and November 2021**
- The first wave of Covid-19 saw a **significant drop in 1st outpatient appointments** (those in the process of diagnosis), with those for pain management **dropped by 59% in April 2020** compared to April 2019. By September and October 2021 this remained significantly reduced compared to pre-Covid levels with **14% below in September 2021 and a fall to 28% below in October**
- A similar pattern is seen in **elective hospital admissions** which for Migraine **dropped by about 93% in the first wave** and whilst seeing significant recovery **remain around 20% below pre-Covid levels in October 2021**
- In total the first year of the pandemic (March 2020 to February 2021) saw **32% less first outpatient attendances for pain management** than the year prior to the pandemic, and **migraine saw 38% less elective hospital admissions**
- Improving community disease management for migraine in line with the '25th percentile' of CCGs could result in **up to 10,000 fewer unplanned admissions (32% of total)**
- Reducing acute and elective length of stay for migraine in line with the '25th percentile' of CCGs could result in **up to 6,000 (19%) fewer bed days per year**
- There is some recovery rate in outpatient backlog for pain management and elective admission backlog for migraine if we assume half that capacity increase (15%) is possible though these **backlogs remain significant and suggest a real challenge, at 21 months and 34 months respectively**



Psoriasis

- **Referrals** decreased significantly during the first wave of Covid-19, **dropping to around 15% of pre-pandemic levels for dermatology**. Recovery has been gradual with dermatology referrals reaching c. **90% of pre-pandemic levels in October and November 2021**
- The first wave of Covid-19 saw a **significant drop in 1st outpatient appointments** (those in the process of diagnosis), with those for **dermatology dropped by 60% in April 2020** compared to April 2019. **By September and October 2021 this remained significantly reduced** compared to pre-Covid levels with 6% below in September and a fall to 16% below in October
- A similar pattern is seen in **elective hospital admissions which for Psoriasis dropped by about 54% in the first wave** and whilst seeing **significant recovery** remain around 32% below pre-Covid levels in October 2021
- In total the first year of the pandemic (March 2020 to February 2021) saw **28% less first outpatient attendances for dermatology** than the year prior to the pandemic, and **psoriasis saw 28% less elective hospital admissions**
- Improving community disease management for psoriasis in line with the '25th percentile' of CCGs could result in **up to 1,000 fewer unplanned admissions (52% of total)**
- Reducing acute and elective length of stay for psoriasis in line with the '25th percentile' of CCGs could result in **up to 6,000 (61%) fewer bed days per year**
- There is some recovery rate in outpatient backlog for dermatology and elective admission backlog for psoriasis if we assume half that capacity increase (15%) is possible though these **backlogs remain significant and suggest a real challenge, at 27 months and 35 months respectively**



Degenerative eye conditions

- **Referrals** decreased significantly during the first wave of Covid-19, **dropping to around 10% of pre-pandemic levels for ophthalmology. Recovery has however been significant** with ophthalmology referrals reaching c. **100% of pre-pandemic levels in October and November 2021**
- The first wave of Covid-19 saw a **significant drop in 1st outpatient appointments** (those in the process of diagnosis), with those for **ophthalmology dropped by 70% in April 2020** compared to April 2019. By October 2021 this remained somewhat reduced compared to pre-Covid levels at about 13% below
- A similar pattern is seen in **elective hospital admissions which for Glaucoma & AMD dropped by about 48% in the first wave** and whilst seeing significant recovery to above pre-Covid levels for several months **remained around 18% below pre-Covid levels in October 2021**
- In total the first year of the pandemic (March 2020 to February 2021) saw **38% less first outpatient attendances for ophthalmology** than the year prior to the pandemic, and glaucoma & AMD saw **17% less elective hospital admissions**
- Improving community disease management for glaucoma & AMD in line with the '25th percentile' of CCGs could result in **up to 1,000 fewer unplanned admissions** (63% of total)
- Reducing acute and elective length of stay for glaucoma & AMD in line with the '25th percentile' of CCGs could result in **up to 2,000 (47%) fewer bed days per year**
- There is some recovery rate in outpatient backlog for ophthalmology and elective admission backlog for glaucoma & AMD if we assume half that capacity increase (15%) is possible though **backlogs remain significant especially for outpatients, suggesting a real challenge**



Parkinson's

- **Referrals** decreased significantly during the first wave of Covid-19, **dropping to around 20% of pre-pandemic levels for neurology**. Recovery has however been significant with neurology referrals reaching **over 95% of pre-pandemic levels in October and November 2021**
- The first wave of Covid-19 saw a **significant drop in 1st outpatient appointments** (those in the process of diagnosis), with those for **neurology dropped by 40% in April 2020** compared to April 2019, though notably **less of a drop than other areas**. By September and October 2021 this remained reduced compared to pre-Covid levels with **6% below in September 2021 and a fall to 19% below in October**
- A **more severe pattern is seen in elective hospital admissions** which for Parkinson's **dropped by about 89% in the first wave** and whilst seeing significant recovery to above pre-Covid levels for several months remained around 48% below pre-Covid levels in October 2021
- In total the first year of the pandemic (March 2020 to February 2021) saw **21% less first outpatient attendances for neurology** than the year prior to the pandemic, and Parkinson's saw **49% less elective hospital admissions**
- Improving community disease management for Parkinson's in line with the '25th percentile' of CCGs could result in **up to 4,000 fewer unplanned admissions** (35% of total)
- Reducing acute and elective length of stay for Parkinson's in line with the '25th percentile' of CCGs could result in **up to 34,000 (30%) fewer bed days per year**
- There is some recovery rate in outpatient backlog for neurology and elective admission backlog for Parkinson's if we assume half that capacity increase (15%) is possible though these remain significant especially for elective admissions, and suggest a real challenge, at 5 months and 51 months respectively



Inflammatory bowel diseases (IBD)

- **Referrals** decreased significantly during the first wave of Covid-19, **dropping to around 17% of pre-pandemic levels for GI and Liver**. Recovery has however been significant with gastroenterology referrals reaching around **88% of pre-pandemic levels in October and November 2021**
- The first wave of Covid-19 saw a **significant drop in 1st outpatient appointments** (those in the process of diagnosis), with those for **gastroenterology dropped by 55% in April 2020** compared to April 2019. There was however quick recovery compared to other areas and **from March to September 2021 activity was above pre-Covid levels**
- A similar pattern is seen in **elective hospital admissions which for IBD dropped only 26% in the first wave** and whilst seeing **significant recovery to above pre-Covid levels for several months**
- In total the first year of the pandemic (March 2020 to February 2021) saw **19% less first outpatient attendances for gastroenterology** than the year prior to the pandemic, and **IBD saw 10% less elective hospital admissions**
- Improving community disease management for IBD in line with the '25th percentile' of CCGs could result in **up to 9,000 fewer unplanned admissions** (22% of total)
- Reducing acute and elective length of stay for IBD in line with the '25th percentile' of CCGs could result in **up to 29,000 (17%) fewer bed days per year**
- There is **significant recovery rate in outpatient backlog for gastroenterology and elective admission backlog for IBD if we assume half that capacity increase (15%)** with these reducing to just 1 and 4 months respectively due to the **relatively minor amount of time for which activity has been below pre-pandemic levels**