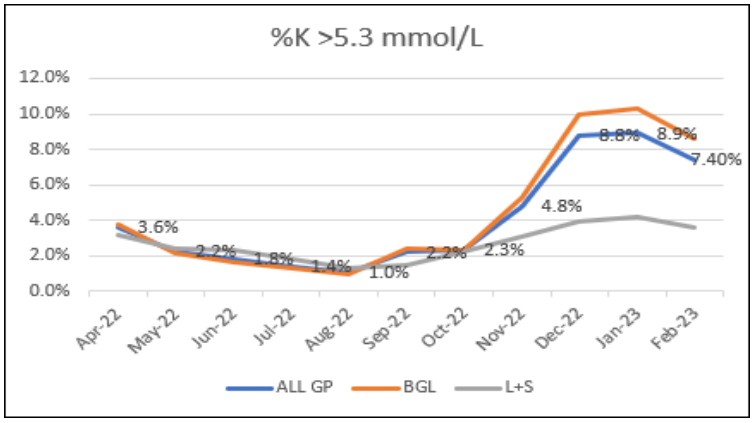
Concern was raised at February's Primary Care Contract Meeting during the presentation of the regular item on potassium figures in the Synnovis report, which showed that the numbers/percentage of potassium results above the agreed upper limit of >5.3mmol/L had gone up for a second month in January 2023.

This prompted a discussion about why this had happened and a request for a review and feedback to the ICB and PBU, and it was agreed that this was needed more urgently that the next Contract meeting on 28th March 2023. Because there had been previous issues prompting a complex incident investigation, all concerned were keen that prompt review was undertaken to identify and offset any developing trends.

An updated graph showing February's figures is shown here:



This shows that the trend is already on the downturn, which is reassuring, however the rapid rise in December and January still warrants investigation.

Seasonal Variation as a factor

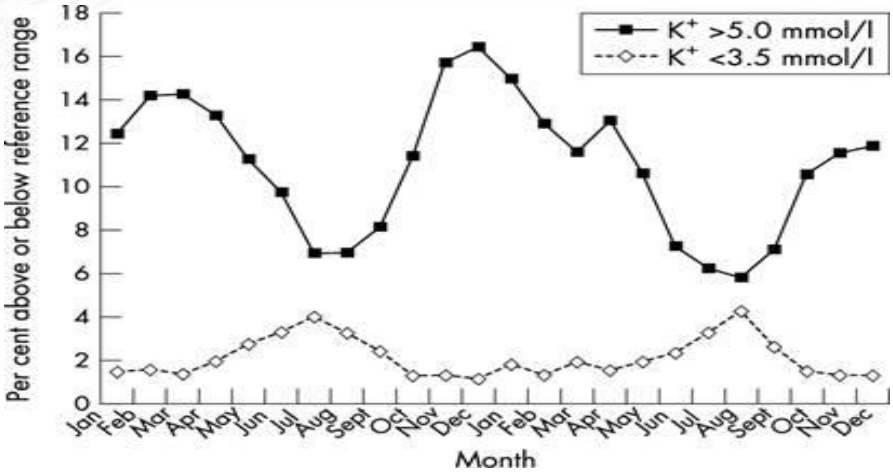
It should be noted that the previous issue also arose over the winter months. With this in mind, we undertook a review of publications relating to seasonal variation of potassium values and found that what we were seeing was well documented and mirrored our trends, including the drop in average values in August at the time of the heatwave:

OpenPathology: fake seasonality in potassium results — dangerous and avoidable | Bennett Institute for Applied Data Science (ox.ac.uk)

Which states *"In the example practice shown above, the proportion of potassium results above the reference range is around 1% in summer, but rises to over 8% in some winter months. If we take the summer level as the baseline, and assume that the rises in winter are solely due to temperature, then for every 100 tests, 8 will give a "high potassium" result, with 7 of these being a false positive.*

Seasonal pseudohyperkalaemia | Journal of Clinical Pathology (bmj.com)

The gist of this paper is that they found a clear variation in average potassium levels for GP samples throughout the year and there is an interesting plot of this:



This is slightly different data as it looks at potassium >5.0 where Synnovis is >5.3, but essentially shows the same thing.

They also showed that the variation was not reflected to the same extent for inpatient samples suggesting that the effect is exacerbated by other factors such as pre-analytical storage prior to, and during, transport, the latter of which Synnovis has mitigated with the temperature controlled vans introduced last Autumn.

However this would not mitigate for any pre-pick up storage issues, and anecdotally we have had reports from couriers that samples are being stored in fridges on some sites.

Previous guidance about sample storage has been shared in November's issue of InSYNc for Primary and Community Care Transformation Newsletter for primary and community care in south east London - edition 11 (mailchi.mp) and there is a link to this guidance on the Synnovis community/primary care webpage Logistics | Synnovis

Within our own data, we have observed that the variation is greater for BGL practices than Southwark and Lambeth, suggesting that the impact of the storage and transport factors for these areas play a larger part. Bromley data has also been reviewed and is more in alignment with that of S&L.

We have been already been visiting and reviewing onsite storage and arrangements at some GP and phlebotomy sites where there had been a previously noted higher proportion of raised potassium, and have been liaising with Lewisham and Greenwich NHS Trust colleagues where these services are operated by them.

However, we are hampered by not having a complete list of all phlebotomy service provision across SEL to enable us to follow up with where the patients of the most affected GP practices may be going. We obviously know our own clinics in Southwark and Lambeth, and we have the information from LGT about their centres in BGL, but are also aware that many GP practices offer their own onsite service and that some of these are commissioned by local GP Federations.

Synnovis has attempted to gather this information as it appeared that the ICB did not hold it centrally. A survey was sent out, but only105 practices have responded to date so this information is incomplete

Borough	Total Practices	Responses received	Percentage received
Bexley	21	17	81
Bromley	44	3	7
Greenwich	30	12	40
Lambeth	41	38	93
Lewisham	30	11	37
Southwark	32	24	75

This information is also key in being able to tailor the transport schedule to optimise pickups, which has been challenging when we cannot be assured that we have all the information necessary or that we are updated when clinics change.

So whilst we can, and have been, looking into possible contributory factors for some practices where we can surmise where their patients may have bloods taken, we are not able to do this for all the hotspots at this time.

We know that the vast majority of BGL work arrives at the Denmark Hill laboratory between 5 and 7 pm, which can be challenging to process this as we would aspire to, and as has been previously reported, we have taken action to stabilise vulnerable samples.

However, staff have reported that within these early evening drop offs, there are samples that have been taken in the morning which is concerning. As our current transport schedule is designed to collect from most surgeries twice a day, and from the major phlebotomy centres more frequently, this suggests that some samples are not being made available for pick up as we would expect.

We contacted Oxleas to discuss the GP referral to District Nurse process for housebound and care home patients, and they reported that the DNs drop the blood samples they take at GP surgeries or other phlebotomy centres and we will liaise with them further to ensure that they know where and when they can safely leave bloods throughout the day rather than batching them up at the end of the day.

During our literature search, the Synnovis Clinical Director for KCH noted this paper which we thought would be helpful for GPs in the interpretation of high potassium results:

Hyperkalaemia (yorkhospitals.nhs.uk)

This guideline is intended to support primary care clinicians to safely manage high blood potassium results.

We will arrange for this document to be made available on our website and can organize for information to go out in the next issues of InSYNC. However, we are aware from feedback that this is not widely read and so any additional route of communication would be welcome.

This is a summary of the work we have undertaken to date to look at where there can be improvements made to the sample pathway to reduce the impact of the many cumulative factors involved. However, whilst we cannot mitigate for the seasonal variation, we will continue to review our processes and work with our GP and phlebotomy colleagues to enable them to optimise sample stability in the pre-Synnovis pathway.