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Dr R. Brittain
HM Assistant Coroner
Inner London North
St Pancras Coroner's Court
Camley Street
London N1C4PP

RE: Regulation 28 in relation to BARR

24th May 2017

Dear Dr Brittain,

I am writing in response to the Regulation 28 Report to prevent future deaths received on 15th May 2017. I understand that Mr BARR (aka JEFFERS) died on 23rd February 2016 having been behaving bizarrely the previous day. He was found collapsed and in cardiac arrest at 5:36 pm on 23rd February and was pronounced dead at 6:46 pm. It is understood that on searching the ward a substance labelled as "Kronic" was found which was reported to contain the synthetic cannabinoid 5F-CUMYL-PINACA. Toxicological analysis was undertaken (including specific analysis for this substance) and according to the toxicology report of Imperial College London, only modafinil and olanzapine were detected (no 5F-CUMYL-PINACA or other drugs within the range of screening performed).
At the inquest on 5th May 2017, the Court heard evidence that the nature of NPS (New Psychoactive Substances) is such that analysis of these compounds is difficult owing to frequent changes in their components and structure. There was a concern that the deceased may have used NPS during his admission to hospital which may have caused or contributed to death but this could not be substantiated by the available evidence. You were concerned that there was no specific evidence adduced which assured you that steps are being taken to address the risk that future deaths may occur unless NPS can be more accurately analysed and detected by toxicological testing.

Whilst we were not directly involved in the case, I welcome the Coroner contacting me and also identifying us as a prominent toxicology provider. I believe I may be able to assist HM Coroner with the issues involved and the concerns. In order to do this, I will address the case of Mr BARR specifically as well as the wider issue of NPS and toxicology.

The death of Mr BARR (aka JEFFERS)

The toxicology report indicates that screening for drugs in blood was performed utilising a "general screening" approach which is appropriate, although the database upon which detection/identification is based on may be limited as although "new psychoactive substances" was cited, the actual NPS included was not stated. Nevertheless, the key feature of this case was the seizure and analysis of the suspected drug product used "Kronic Black Label". This is especially important nowadays in NPS testing as often they may only be unlabelled white powders, tablets, liquids, herbal plant material or branded products, the latter having no consistent relation to the brand and the contents.

Subsequent analysis of the “Kronic” product identified 5F-CUMYL-PINACA which is a synthetic cannabinoid first seen in the UK in late 2014. It appears analysis of the blood for this compound as well as 3 other synthetic cannabinoids detected no compounds. It is unclear if this analysis was performed by Imperial College or not but as stated in the report, there are hundreds of potential compounds so it is unclear why only 3 additional substances were analysed for. Nevertheless, focusing on the suspected drug in question was entirely appropriate. The reason for its apparent absence in the blood could be due to it being present at a concentration below the limit of detection (thought to be 0.25 ng/mL for the additional 3 and not sure if this also applied to 5F-CUMYL-PINACA). As there are no published concentrations in post-mortem blood for 5F-CUMYL-PINACA it is not known if this limit of detection was sufficient or not but on the whole such a limit should suffice. Another reason is that the substance may have metabolised and been eliminated from the blood during the time elapsed between using the substance and death. In this case this may have been many hours and although no specific data exist for the expected time window of detection, current information suggests rapid metabolism/elimination of synthetic cannabinoids so it is possible that disappearance from the blood may have occurred. A third reason may be that synthetic cannabinoids are known to be unstable, although 5F-CUMYL-PINACA does not possess the chemical components found in current synthetic cannabinoids that are highly prone to instability in blood. A final reason for its apparent absence may be that Mr BARR had not used the product or had used a different product (if at all) recently prior to death. I am not aware if these scenarios were discussed during the inquest.

If it assists HM Coroner, our approach would have also been to undertake a general drug screen but in both blood and urine which would have included a significant number of known (over 1000) and unknown compounds - including many NPS. A list is available if required. In such a case, along with analysis of the “Kronic” product, we would have also applied advanced techniques to analyse for latent drug metabolites in the urine especially for synthetic cannabinoids as due to their purported rapid metabolism/elimination, they are often present as metabolites only. Regardless we would have described the various scenarios that may have occurred and provided extended interpretation in the report. This is no criticism of the approach by Imperial College but merely provides HM Coroner with some form of comparative approach to inform my next point.

<u>New Psychoactive Substances</u>

Clearly the inquest heard evidence of the challenging nature of NPS and their analysis. This is due to a number of things but is largely in part due to the changing chemistries, sometimes potent nature leading to very low concentrations, lack of reference material to enable “pro-active” method optimisation and potential instability of such substances in biological fluid – especially post-mortem samples. This is not helped by the variable analytical methods employed by toxicology organisations as there is no one “gold standard” technique or instrument as a multi-technique approach is the best option and this requires time and investment, that is not possible for all or many organisations or palatable in the current climate of lower costs and quicker turnaround time for analysis. So you raise an appropriate concern in that how is this being addressed by the toxicological community. The short answer is that it is but also it isn’t or has not been sufficient across the board. You will have seen in this single case, a slightly different approach outlined by two long-standing and experienced organisations, therefore concern is warranted if this is extrapolated to the wider laboratory marketplace.

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The toxicology community is aware of the challenges and problems involved in NPS and there is a concerted effort to first ensure they are aware of the various drugs of concern, whether this is through awareness of the scientific literature and/or attendance at scientific meetings (both national and international) where NPS are invariably discussed, not least at the UK & Ireland Association of Forensic Toxicologists (UKIAFT) where Dr Paterson and myself are Chair and Vice-Chair, respectively. Within these meetings (especially internationally) analytical methodologies are presented and published but of course it is the duty of the toxicologists and organisations to assess whether they have the necessary opportunity to replicate such work.

For our organisation in particular, we regularly attend and present at such meetings as well publishing on the topic of NPS (see list of publications on our website) and importantly are also actively engaged in the UK and European Early Warning Systems for NPS. I am also personally a Member of the Expert Committee for Drugs and Drug Dependence (ECDD) at the World Health Organisation that prioritises NPS for assessment for international drug control as well as working directly with the United Nations Office on Drugs and Crime (UNODC) that monitor the situation worldwide. This has resulted from my many years involvement in the investigation and identification of NPS (sometimes for the first time in the UK, Europe and the world) which has resulted from a significant time investment and determined effort in such investigations on the back of clinical and post-mortem toxicology casework. We also work with Liverpool John Moore's University to obtain synthesised or characterised reference material of NPS that are newly on the market or have yet to become fully commercialised. This is subsequently coupled with publications to allow other laboratories to detect and identify such substances. This particular approach has been very successful in many cases on behalf of HM Coroners and the Police, with us being able to pre-emptively identify NPS that have had a positive impact on the investigation; including cause of death and driving under the influence in particular. We also provide training for stakeholders (HM Coroners, Coroners' Officers, Pathologists and APTs) in relation to current drugs and toxicology. Even for ourselves there are still challenges such as ensuring methodologies are kept up-to-date and potential substance instability is researched and understood; to this end we regularly accommodate university MSc studentships (including King's College London and the University of Birmingham) for short-term projects to do this.

In conclusion, I hope some of these comments address some of your entirely valid concerns but there is also a recognition that it requires investment and effort of all parties, not least toxicology providers, to move forward with this. Despite variations in legislation, NPS continue to be a challenge to all those concerned and you rightly highlight that improvements should be made to prevent future deaths. If it assists, I would be happy to discuss any of these aspects with yourself and HM Senior Coroner further, as well as providing any analytical support for the District.

Yours sincerely

Dr Simon Elliott PhD, BSc, MRSC, MCSFS, CSci, ERT

(Consultant Forensic Toxicologist, Managing Director)

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