patients were pregnant, their gender was unknown, or if there was a history of anaemia, iron deficiency, thalassaemia, haemochromatosis, inflammatory and infective conditions, or menorrhagia.

Results: 284,235 results were analysed. Ferritin and TSAT exhibited a significant decrease in the first 3 months of life, with concomitant increase in transferrin. Low ferritin flag rates peaked between 2 and 3 years, and again at 13 to 15 years, whereas high TSAT flagging was highest under 3 months for both genders, with a steady rise in boys over 15 years.

Conclusion: The appropriateness of age-related limits for iron studies in the paediatric population should be considered when interpreting results, especially in children under 3 months of age.

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IMPACT OF THE 2020 VICTORIAN COVID LOCKDOWN MEASURES ON SERUM VITAMIN D LEVELS

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Introduction: In an attempt to curtail the spread of the SARS-CoV-2 virus, the Victorian Government enacted a number of lockdown measures which confined many metropolitan residents to their homes for significant periods during 2020. We sought to examine whether there was any population-level effect on serum vitamin D levels resulting from extended home isolation during the Victorian 2020 winter.

Methods: A total of 3,839,232 serum Vitamin D measurements from the Melbourne Pathology database spanning the period January 2011 to May 2021 were extracted and analysed according to age, gender, and season.

Results: Analysis of results according to age, gender and season showed a reduction in overall vitamin D levels and an associated increase in the percentage of patients with vitamin D deficiency during the period of the second lockdown, but these results were comparable to the normal winter seasonal variation in previous years.

Discussion: Victoria entered its longest and most restrictive lockdown on 2nd August 2020, leading to speculation in the media that this could result in widespread deleterious reductions in Vitamin D levels.¹ Our results show that the Victorian COVID lockdown measures had no significant effect on vitamin D levels when adjusted for age, gender and the normal Victorian seasonal variation. These results correlate with two retrospective studies from regions of Italy that experienced similar strict lockdown conditions.^{2,3}

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CONVOLUTIONAL NEURAL NETWORKS ON POSTMODERN HISTOLOGY ORGAN RECOGNITION

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Convolutional neural network (CNN) has advanced in recent years and translated from research into medical practice. Research on CNNs in forensic/post mortem pathology is almost exclusive to post mortem computed tomography, despite the wealth of research into CNNs in surgical/anatomical histopathology. This study was carried out to investigate whether CNNs are able to recognise different organs on histology slides. This study compared four CNNs commonly used in surgical/anatomical histopathology to identify microscopic images of brain, heart, kidney, lung and liver. One of the CNNs used (InceptionResNet v2) was able to show a >95% accuracy in classifying the organs. The result of this study is promising and demonstrates that CNN technology has potential applications as a screening and probably a computer assisted diagnostics tool in forensic/post mortem histopathology.

AN INVESTIGATION OF CHANGING FORENSIC PATHOLOGY WORKLOADS IN THE CORONIAL JURISDICTIONS OF AUSTRALIA

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The workload of forensic pathologists involves performing autopsies for the coroner. Over the period 2006–2016 it was expected to see a change in autopsy workload of forensic pathologists in Australia due to the increasing number of deaths per year. This study investigated if trends in Australian coronial autopsy workload are related to changes in Coroners Acts. Analysis was performed using data from the National Coronial Information System (NCIS), which was compared with the death data from the Australian Bureau of Statistics (ABS) and Coroners Acts between 2006–2016. In every jurisdiction, the number of deaths per year increased during the study period, but not all jurisdictions observed an increase number of autopsies per year. In three of the eight coronial jurisdictions of

Australia, changes in autopsy numbers coincided with changes in Coroners Acts. However, changes in autopsy numbers per year were also observed in without modifications to Coroners Acts. The findings suggest that forensic pathology autopsy workload can be influenced by changes in Coroners Acts and by changes relating to operating policies within individual jurisdictions.

GAME OVER: COCAINE AND VIDEO GAMES AS CONTEMPORARY RISK FACTORS FOR PULMONARY EMBOLISM

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Pulmonary embolism (PE) is a life-threatening condition in which emboli, often from the legs or pelvis lodge in the pulmonary vasculature causing impairment of gas exchange and right ventricular strain. Virchow's triad of hypercoagulable state, endothelial activation and venous stasis is a framework for understanding risk factors. Yet, some risk factors seem deceptively benign or esoteric.

The case described is of a 33-year-old male who was found suddenly and unexpectedly deceased. According to family, he would play video games for extended periods of time including overnight. Autopsy examination showed the body of an obese male with the presence of bilateral pulmonary thromboemboli. Toxicological analysis showed the presence of metabolites of cocaine. There are multiple factors that contributed to PE in this individual. Obesity may have contributed to PE through its association with venous stasis. Extended periods of time engaging in video games has been associated with PE through venous stasis and a hypercoagulable state if dehydrated. Cocaine is prothrombotic by causing endothelial injury with subsequent chemokine activation. Cocaine may cause a hypercoagulable state as a result of increased haematocrit. We discuss these factors and highlight the need to consider non-traditional risk factors.

INCREASED PREVALENCE OF SODIUM NITRITE SUICIDES IN SOUTH AUSTRALIA

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Sodium nitrite (NaNO₂) is a water-soluble, white-yellow coloured crystalline powder with broad industrial applications.¹ In Australia, it has also been used to humanely control growth of feral pig populations.² While several cases of accidental consumption have been reported in the literature, sodium nitrite has recently emerged as an increasingly popular method of pharmacological suicide. This method has been recommended in The Peaceful Pill Handbook³ with additional information and 'suicide kits' available online. Between 2000 and 2019, 10 cases of

intentional sodium nitrite ingestion were identified from records at Forensic Science South Australia and the National Coronial Information System. All 10 cases occurred in the latter 3 years of the study period. All decedents had a history of depression or chronic illness and demonstrated characteristic post-mortem signs of methemoglobinemia (blue-grey post-mortem hypostasis and dark brown discolouration of blood and internal organs). This study highlights a significant emerging public health issue. Awareness of emerging fatal substance abuse trends, clinical symptoms and post-mortem signs by health professionals and forensic pathologists is critical to effectively identifying these cases at presentation and autopsy.

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CTNNB1 EXON 3 MUTATIONS IN DESMOID AND OTHER TUMOURS

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Desmoid tumours are rare soft tissue tumours. The tumours are a locally invasive monoclonal fibroblastic proliferation leading to a variable clinical course. Abnormal functioning of the Wnt/APC/Beta catenin pathway accounts for a large proportion of desmoid tumours. There are currently two genetic subtypes: sporadic desmoid tumours resulting from somatic *CTNNB1* mutations in exon 3 and desmoid tumours associated with germline pathogenic variants in APC. APC and *CTNNB1* mutations are thought to be mutually exclusive. Mutations in *CTNNB1* are also associated with molecular subtypes of other tumours including hepatocellular adenomas and childhood medulloblastomas.

Using Sanger sequencing, we searched for hotspot mutations in exon 3 of *CTNNB1* using a case series of 13 patients with desmoid tumours. 11/13 patients harboured *CTNNB1* mutations. We also assisted in the histopathological diagnosis of two other tumours with aberrant IHC staining (hepatocellular adenoma and medulloblastoma), both harbouring *CTNNB1* mutations.

Hepatocellular adenomas with beta catenin mutations are associated with a high risk of malignant transformation and WNT-activated medulloblastomas are associated with a very good prognosis. The molecular subclassification of desmoid tumours and other tumours, combined with histopathology, assists with understanding the genetic basis of disease, tailoring treatment options and provides informative prognosis. Our laboratory offers *CTNNB1* testing.