VKORC1 and *CYP2C9* account for almost 50% of the variance in individual dose requirements. Investigation of the genomic basis of ADRs is not only important for development of predictive genetic testing, but can also provide insights into the mechanisms of ADRs.

STANDARDISATION OF ASSAYS FOR PTH, VITAMIN D METABOLITES AND BONE TURNOVER MARKERS

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Parathyroid hormone (PTH) measurement is required for assessment of patients with calcium and parathyroid disorders. PTH is most important to guide treatment of renal bone disease (CKD-MBD). Currently there is no standardisation of commercially available assays of PTH. Standardisation of PTH assays is desirable and is achievable through the development of reference standard material and the establishment of a candidate reference measurement procedure for PTH(1–84). Advances in mass spectrometric techniques enable the precise definition of what PTH methods measure.

The Vitamin D Standardization Program aims to promote the standardisation of 25-hydroxyvitamin D assays worldwide. Reference procedures have been developed by NIST (who have also produced Standard Reference Materials), together with the University of Ghent and CDC. The Vitamin D External Quality Assessment Scheme (DEQAS) is an accuracy-based scheme that complements these efforts.

Procollagen type I N propeptide (s-PINP), and cross-linked β -isomerised type I collagen C-telopeptide (s- β CTX), in blood are designated as reference standard bone turnover markers in osteoporosis. Efforts are ongoing in order to standardise pre-analytical steps as well as standardise / harmonise s-PINP and s-CTX measurements as appropriate. Reporting units have been standardised. Efforts to harmonise reference intervals, decision thresholds, reference change values and treatment targets are ongoing.

UNUSUAL BANDS ON PROTEIN ELECTROPHORESIS

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Serum protein electrophoresis (with immunoglobulins quantification) is central to the detection of monoclonal proteins. The normal electrophoretic pattern is very familiar but proteins such as fibrinogen, C-reactive protein (CRP) and haemoglobin can confuse the less experienced operator. Capillary zone electrophoresis with a UV detection system can also detect drugs, e.g., contrast materials and some antibiotics. Monoclonal antibodies as biologic drugs are now commonly used and when given at a high enough concentration, can be seen on the protein electrophoretic separation. Recognising and identifying these unusual bands on the electrophoretic separation can be a challenge; immunofixation can identify CRP and fibrinogen and haemoglobin should be apparent by looking at the sample. The monoclonal antibody drugs are more challenging as there is only a small number where techniques for their positive identification are available. Laboratories must be aware of the causes of unusual bands on

electrophoresis determine whether a new and unexpected band is part of the patient's treatment or due to the emergence or re-emergence of a clonal B cell population. Interpretation of protein electrophoresis is a 'high level' activity where training, experience and robust thought processes are required

AUTOANTIBODIES IN DIABETES

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Glutamic acid decarboxylase autoantibodies (GADA), islet cell autoantibodies (ICA), insulinoma-associated (IA-2) autoantibodies, and zinc transporter autoantibodies (ZnT8) are all associated with early and latent autoimmune diabetes mellitus (Type I DM). They have predictive and diagnostic value. They are used to identify children at higher risk who will develop Type I DM. In polyglandular autoimmune disease they are measured along with other autoantibodies to endocrine targets as a means to pre-empt later clinical presentations. In Latent autoimmune diabetes in adults (LADA) the presence of autoantibodies can help differentiate this condition from Type II DM with beta cell failure. They can be used in patients being treated with diabetogenic drugs for clearer understanding of diabetic disease pathogenesis.

CLINICAL PATHWAYS FOR TRANS AND GENDER DIVERSE CHILDREN AND ADOLESCENTS, AND THEIR RELEVANCE TO PATHOLOGISTS

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Paediatric gender clinics around the world have witnessed an exponential increase in referrals of children and adolescents seeking gender-affirming care in the past decade. While the exact reasons for this rise remain unknown, it is clear that trans and gender diverse (TGD) young people within our communities face significant challenges in terms of discrimination and mental health. To help guide clinical care in this area, the first ever guidelines focusing solely on the care of TGD children and adolescents were recently published by the Royal Children's Hospital Gender Service in Melbourne, Australia.^{1,2} In this presentation, I will describe these guidelines as well as the journeys that TGD young people must navigate through the health system to obtain gender-affirming care. In many cases, these journeys involve interactions with pathology service providers, whose practices – like those of the health care system overall – are not well setup to cater for the needs of TGD children and adolescents, creating the potential for further discrimination and suboptimal care. Opportunities to address these challenges will therefore also be discussed.

References

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