54 AN ARTIFICIAL INTELLIGENCE APPROACH TO AUTOMATED GLOMERULAR ANNOTATION AND COUNTING IN DIGITAL RENAL BIOPSIES

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Introduction In recent years digital pathology is evolving into the standard of care for the histology laboratory workflow; allowing remote reporting of cases, improved record keeping, and accountability in reporting (1). Digital pathology allows us to bring quantitative and advanced analysis to the histopathology field.

Machine learning has been implemented to segment features of whole slide images (WSI), with a U-net architecture (2) accurately segmenting glomeruli, tubuli and interstitium (3). Here we create a workflow for automated glomerular annotation and deliver number and shape of glomeruli metrics to the pathologist.

Materials and Methods Anonymised Haematoxylin and Eosin (H&E) stained, archival diagnostic paediatric renal biopsy samples from Great Ormond Street Hospital were imaged on an Aperio CS2 slide scanner at 40x magnification. Glomeruli were manually annotated using ImageScope software and image patches (2048 × 2048) with annotation masks saved to the training database which was used to train a U-net model.

A pipeline was developed using Python to take WSIs, export tiles which feed the trained U-net to generate predictions. Prediction tiles are recombined into a mask indicating the presence of glomeruli. This was converted into WSI annotation format using the bounding polygons of positive mask regions.

Results The mean dice score for all test image patches (n=384) was 0.71 for glomerular segmentation. The network identified 106 glomeruli with 8 false positives and 8 false negatives for the testing WSIs (N=3).

The speed of image annotation on a CPU was 13.63±1.31 minutes (mean±SD, n=3); producing annotations for a 18000 × 203000 pixel WSI.

Discussion U-net segmentation of histopathology features in WSI renal biopsies is readily incorporable into the histology pipeline and can be used to produce annotation files before reaching the pathologist. A quantitative glomerular count can improve the reproducibility of reports and lead to a better-informed treatment plan for the patient.

55 THINKING OUTSIDE THE BOX – ENHANCING SIMULATED LAPAROSCOPIC SKILLS TRAINING AT GREAT ORMOND STREET HOSPITAL

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Background The role of simulation in laparoscopic skills training is substantial, particularly so in paediatric surgery where real life training opportunities can be limited by relative case complexity and smaller patient size. COVID-19 has further impacted on such opportunities owing to the reduction in provision of non-emergency surgery.

This QIP aimed to evaluate and enhance trainee engagement and delivery of laparoscopic skills simulation training at GOSH. **Methods** A retrospective review of attendance in the laparoscopic skills room (LSR) was conducted using sign-in records over 7 months from June 2019. Trainees completed a survey to assess self-reported awareness and engagement with the LSR and trainee perspectives. A modified survey was distributed in June 2020 to capture trainee experience over the preceding 3 months following introduction of a low-cost box trainer in the general surgery office.

Results Retrospective sign-in data from June-December 2019 demonstrated the LSR was visited by 7 individuals on 18 occasions, averaging 2.5 visits per month with survey data reflecting limited trainee engagement (60% of trainees reported having ever visited the LSR).

Secondary survey data from 14 participants in June 2020 demonstrated no trainees had visited the LSR in the preceding 3 months. Only 2 trainees (14%) had used the office box trainer with the remainder citing workload (79%) and distracting environment (50%) as reasons for limited uptake. 29% of trainees reported owning a box trainer for home use. 93% of trainees felt they would benefit from consultant led box trainer supervisions.

Conclusion Whilst low-cost box trainers have been shown to be effective tools for simulated skills training, factors such as environment and a lack of allocated training time can limit trainee engagement. A combined approach to laparoscopic skills training with designated low-cost simulators for home use as well as designated consultant supervisions could enhance local laparoscopic skills training.

56 TEACHING IN 2020: THE SHIFT TO VIRTUAL TEACHING AND HOW WE IMPROVED

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Background In 2020 when all non-essential face to face teaching was cancelled, The Graduate Team who deliver the Preceptorship Programme at GOSH faced a huge challenge in their practice. Preceptorship is an NMC and HEE standard for all newly registered practitioners (NRPs), so as we settled into our 'new normal' this teaching, including vital tools of reflection and resilience, needed to be completed in a new way. The Graduate Team at Great Ormond Street Hospital had to work flexibly and reshape their preceptorship teaching to work in a digital, distanced world.

Method Based on our previous teaching curriculum and focusing on HEE and NMC standards of preceptorship, we made a programme of condensed study days, delivered using a combination of zoom and independent learning. We asked for feedback throughout the study days, and reviewed all anonymous feedback after each day to continue to improve.

Results Through regular virtual teaching, and feedback provided in evaluations, we found that learners are less likely to interact in a virtual environment, be that due to a lack of equipment or confidence. After reviewing feedback and increasing in confidence with zoom, we added in further opportunities to interact, using the chat and polling functions on zoom, utilising apps like slido and kahoot as well as 'ice breakers' to ensure everyone has spoken on camera and introduced themselves before the sessions begin. Our evaluations,

interactions and teaching have improved as new elements have been added to these days, and with exposure and practice in this new way of working.

Recommendations The Graduate Team found interactions and reflections from learners are more readily offered up where there are a variety of ways to present these, rather than solely having to speak on camera to their teacher and peers, and would recommend incorporating these into virtual learning programmes.

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COMMUNITY SPEECH AND LANGUAGE THERAPISTS' VIEWS OF REPORTS FROM THE NEURODEVELOPMENTAL ASSESSMENT CLINIC AT GREAT ORMOND STREET HOSPITAL

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The Neurodevelopmental Assessment Clinic (NAC) at GOSH is a multi-disciplinary, tertiary level service which provides specialist expertise in the assessment of children with complex neurodevelopmental disorders and provides diagnostic opinions regarding autism, language disorder, intellectual disability, ADHD. At the end of each child's assessment, NAC gives a summary report to parents and key professionals such as the child's community Speech and Language Therapist (SLT). Community SLTs have an important role carrying out therapy and providing advice and support to children's schools and parents/carers.

The aim of this study was to evaluate whether the summary reports prepared by NAC are an effective way of communicating the clinic's key findings and recommendations to community SLTs. This study was carried out by Phoebe Martin, UCL MSc student, supervised by Abigail Mance, GOSH SLT and Dr Carol Sacchetti, Principal Teaching Fellow at UCL.

A survey was given to twelve community SLTs and one further telephone interview was completed. Thematic analysis methods were used to analyse the data. Fifteen paediatricians' (referrers) opinions, gathered from a previous study, were used for comparison.

Overall NAC's reports were valued by the community SLTs as they added to their knowledge and they reported the recommendations in the reports were realistic. Thematic analysis showed that resources such as time and what the local service could offer were both facilitators and barriers to implementing recommendations. External factors also had implications for the implementation of recommendations. Higher alignment between NAC's recommendations and community SLT services' resources, such as time and staffing, increased the likelihood of the recommendations being implemented.

Further investigation of how useful other key professionals in the community such as teachers find the reports from NAC is recommended.

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BIOETHICS SUPPORT IN A TERTIARY CHILDREN'S HOSPITAL DURING THE COVID-19 PANDEMIC

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During a pandemic, ethical concerns arise in relation to allocation of resources for seriously ill patients. The COVID-19 pandemic predominantly affected adults with a high associated morbidity and mortality, however it was anticipated that there would also be an impact on the paediatric population. There were four phases to the work of the Paediatric Bioethics Centre (PBC) service at GOSH:

1.Preparation: Documents to support/guide hospital teams and regional inpatient, community and hospice settings were prepared with colleague. We adapted existing 'ethics support' mechanisms to combat workforce moral distress, distress/injury.

2.Bioethics activity: was highest in the rapid response service where difficult treatment decisions were considered with clinical teams, families and young people. 12 reviews were carried out from March- May to consider experimental antiviral treatment, allocation of resources in the context of COVID-19 and non Covid cases considering a ceiling of treatment. Telemedicine facilitated the rapid response to these urgent cases and involved parents, including those not in the hospital.

3.Education: the service provided 'pandemic webcasts' on decision-making and broader child-health concerns. Staff support with other wellbeing services has been essential, especially for those deployed to overwhelmed local adult ICUs.

4. Reflection: focussed on (a) Research Re future deployment to minimise moral distress/injury, b) remote video-conferencing – parents/participants experience/ability to consider complex ethical issues and c) role of faith/non-faith in society's recovery.

This work illustrates the importance of the role of the Paediatric Bioethics Service in a tertiary children's hospital during the COVID-19 pandemic.

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THE IMPACT OF THE COVID-19 PANDEMIC ON THE PROVISION OF CHILDREN'S HEALTHCARE- CONSIDERATION OF THE ETHICAL ASPECTS

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The major impact of the COVID-19 pandemic has been on the health of adults. A small percentage of children have been acutely ill with COVID-19. Urgent reconfiguration of services with centralisation of paediatrics to free up resources for ill adults was carried out in North Thames and routine paediatric services at GOSH and in other Trusts curtailed. During a pandemic, the rights and interests of individuals can be trumped by a utilitarian approach to the provision of services such as health, education and social welfare. However, the ethical aspects of the impact of this on children's health requires consideration. Arguably, children have been the bystanders to this process without involvement of young people in planning these changes (Larcher and Brierley 2020). Children have not been able to access treatment locally and visiting was limited to one adult, even for those children with serious, life threatening illness. Face to face outpatient consultations for ill children have not been accessible and community AHPs and services for children with chronic disease and disability have not been available