A REVIEW ON INTERNATIONAL GUIDELINES FOR DIGITAL PATHOLOGY

M. Garcia-Rojo*
Hospital de Jerez de la Frontera, Pathology Department, Jerez de la Frontera, Spain

Introduction/ Background
Pathologists are looking at digital pathology not as much as an efficient telepathology solution but as an instrument to improve the quality and efficiency of their own daily clinical work beyond the use of the conventional microscope. The term digital pathology (DP) should also include interoperability and workflow considerations, and basic technical aspects of whole slide imaging (WSI), messaging, and standards should be also known by pathologists.

Aims
The aim of this study is reviewing the technical features of WSI systems in existing guidelines available internationally.

Methods
The following guidelines and technical documents have been evaluated:
• College of American Pathologists (CAP), 2013: Validation
• American Telemedicine Association (ATA), 1999: Telepathology
• Digital Pathology Association (DPA), 2011. First WSI guideline
• Food and Drug Administration (FDA).
• Canadian Association of Pathologists (CAP-ACP).
• Centers for Medicare & Medicaid Services (CMS/ CLIA).
• Centers for Disease Control and Prevention (CDC/ CLIAC).
• Society of Toxicologic Pathology (STPath).
• European Commission (EU-EC).
• Spanish Society of Anatomic Pathology (SEAP-IAP).
• The Royal College of Pathologists (RCP).
• The Royal College of Pathologists of Australasia (RCPA).

Results
Since February 2015, a draft of Technical Performance Assessment of Digital Pathology Whole Slide Imaging Devices from FDA is available. Regarding display (monitor), a complete description of the display, graphics cards, and control software items to be considered are included (display technology [LED, LCD], color calibration, ambient light sensors,...) although there is no mention to refresh rate. In the College of American Pathologists (CAP) Digital Pathology Resource Guide, references to guidelines or position papers other than CAP guidelines are dispersed in other sections of this document. Hanna et al (2015) reviewed existing guidelines and position statements for digital pathology, with special attention to validation and telepathology. Evans et al (2014) made a comparison between American Telemedicine Association (ATA), Royal College of Pathologists (RCP) and Canadian telepathology guidelines. In summary we could find the following topics in the corresponding guidelines: System architecture was only mentioned in SEAP document. Components of DP system: ATA, DPA, FDA, SEAP, STPath. Badwith/Network: ACP, DPA, SEAP. Interoperability: ATA, ACP,
CLIA, DPA, SEAP, STPath. Scanning speed: ACP, DPA, SEAP; Storage: ATA, DPA, RCP, SEAP. Image quality in WSI: ACP, DPA, RCP, SEAP; Image compression and processing: ATA, EU-EC, DPA, SEAP.

Conclusions:
- Some basic technical features of a WSI systems that are of high interest to pathologists are scanning speed (e.g. 1-2 minutes 20x), autoloader capacity (100 slides), image quality (resolution 0.25-0.50 μ/ pixel) rescanning rate (<5%), image compression (<70%), monitor quality (30 inches 4-8 MPx), and viewing experience (refresh rate, network bandwidth).
- In primary diagnosis, we need some new regulations also in European countries.

Acknowledgment:
This work has been supported by the AIDPATH project, an EU 7FP IAPP Marie Curie action, contract number 612471