Supplement

List of Abbreviations

AIH	Autoimmune Hepatitis
AIP	Autoimmune Pancreatitis
AMA	Anti-mitochondrial antibodies
ASC	Autoimmune sclerosing cholangitis
AUC	Area under the curve
CA 19-9	Carbohydrate antigen 19-9
CCL-18	Chemokine (C-C motif) ligand 18
CBD	Common Bile Duct
CNI	Calcioneurin inhibitor
CP	Chronic Pancreatitis
CPG	Clinical Practice Guideline
CT	Computer Tomography
DM	Diabetes Mellitus
EPC	European Pancreatic Club
ERCP	Endoscopic Retrograde Cholangio-Pancreatography
EUS	Endoscopic Ultra-sonography
FDG	Fluoro-D-Glucose

FNB	Fine needle Biopsy
GC	Gluco-corticoids
GEL	Granulocyte-epithelial lesion
GRADE	Grading of Recommendations Assessment, Development, and Evaluation
HaPanEU	Hormonising Pancreatitits across Europe (UEG guidelines chronic pancreatitis)
HISORt	Histology, imaging, serology, other organ involvement, response to therapy
HPF	High Power Field
IAC	Immune associated cholangitis
IBD	Inflammatory Bowel Disease
IgG4-RD	Immunglobulin 4 related disease
IgG4-RD RI	Immunglobulin 4 related disease Response Index
IPMN	Intraductal Papillary Mucinous Neoplasia
IRC	Immune-Related Cholangitis
MMF	Mycophenolate Mofentil
MPD	Main Pancreatic Duct
MRCP	Magnetic Resonance Cholangio-Pancreatography
MRI	Magnetic Resonance Imaging
MTX	Methotrexate
OOI	Other Organ Involvement
PBC	Primary Biliary Cirrhosis

PDAC	Pancreatic Ductal Adeno-Carcinoma
PEI	Pancreatic Exocrine Insufficiency
PET-CT	Positron-Emission Tomography – CT
PSC	Primary Sclerosing Cholangitis
qPCR	quantitative Polymerase Chain Reaction
RNA	Ribonucleic acid
SGF	Swedish Gastroenterology Society
SI	Signal Intensity
TED	Test and evaluation Directorate
UDCA	Ursodeoxycholic acid
UEG	United European Gastroenterolgy
US	Ultrasound
WP	Working Party

Table S1: GRADE system

A= high quality evidence

B= moderate quality evidence

C= poor quality evidence

1= strong recommendation

2= weak recommendation

	Clarity of risk/benefit	**Quality of supporting evidence**	**Implications**
1A. Strong recommendation. High quality evidence.	Benefits clearly outweigh risk and burdens, or vice versa.	Consistent evidence from well-performed RCTs or overwhelming evidence in some other form. Further research is unlikely to change our confidence in estimating benefit and risk.	Strong recommendation, can apply to most patients in most circumstances without reservation.
1B. Strong recommendation. Moderate quality evidence.	Benefits clearly outweigh risk and burdens, or vice versa.	Evidence from RCTs with important limitations (inconsistent results, methodological flaws, indirect or imprecise), or very strong evidence in some other form. Further research (if performed) is likely to have an impact on our confidence in estimating benefit and risk and may change the estimate.	Strong recommendation, likely to apply to most patients.
1C. Strong recommendation. Low quality evidence.	Benefits appear to outweigh risk and burdens, or vice versa.	Evidence from observational studies, unsystematic clinical experience, or from RCTs with serious flaws. Any estimate of effect is uncertain.	Relatively strong recommendation; might change when higher quality evidence becomes available.
2A. Weak recommendation. High quality evidence.	Benefits closely balanced with risks and burdens	Consistent evidence from well performed RCTs or overwhelming evidence in some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk.	Weak recommendation, best action may differ depending on circumstances or patients or social values.
2B. Weak recommendation. Moderate quality evidence.	Benefits closely balanced with risks and burdens, some uncertainly in the	Evidence from randomized, controlled trials with important limitations	Weak recommendation, alternative approaches likely to be better for some

	estimates of benefits, risks and burdens	(inconsistent results, methodological flaws, indirect or imprecise), or very strong evidence in some other form. Further research (if performed) is likely to have an impact on our confidence in estimating benefit and risk and may change the estimate.	patients under some circumstances.
2C. Weak recommendation. Low quality evidence.	Uncertainty in the estimates of benefits, risks, and burdens; benefits may be closely balanced with risks and burdens.	Evidence from observational studies, unsystematic clinical experience, or from RCTs with serious flaws. Any estimate of effect is uncertain.	Very weak recommendation; other alternatives may be equally reasonable.

Table S2 Structure of the Working parties (WP)

1. Biomarkers in IgG4-related gastrointestinal diseases

Jonas Rosendahl (leader), Enrique de Madaria, Luca Frulloni, Markus M.Lerch, J.-Matthias Löhr

2. IgG4-related disease of pancreas

Miroslav Vujasinovic (leader), Marc Basselink, Jens Brøndum Frøkjær, Marco Del Chiaro, Julio Iglesias-Garcia, Thilo Hackert, Nikolaos Kartalis, Alexander Kleger, Johanna Laukkarinen, Alexander Schneider, Caroline S. Verbeke, Marie Pierre Nicolas-Vullierme.

3. IgG4-related diseases of liver and bile-ducts

Ulrich Beuers (leader), Domenico Alvaro, Frank Lammert, Joanne Verheij.

4. IgG4-related gastrointestinal diseases of esophagus, stomach and bowel

Deniz Duman (leader), Sönke Detlefsen, Alexey Okhlobystin, Natalia Gubertskis, Gabriele Capurso.

5. Clinical manifestations and management of systemic IgG4-related diseases

Nicolas Schleinitz (leader), Eric F.H.van Bommel , Emanuel Della-Torre, Andrea Laghi, Nick de Vries

6. IgG4-related digestive diseases in children

Grzegorz Oracz (leader), Piotr Czubkowski, Frederik Lindgren, Andrea Parniczky, Heiko Witt

7. IgG4-related gastrointestinal diseases and diabetes mellitus

Nils Ewald (leader), Gabriele Capurso, Enrique Dominguez-Munoz

8. IgG4-related gastrointestinal diseases and cancer

Emma L Culver (leader), Alexander Schneider, Sönke Detlefsen, Raffaella Pozzi Mucelli

9. Systemic treatment of IgG4-related digestive diseases

Vinciane Rebours (leader), Frank Buttgereit, Enrique de Madaria, Emanuel Della-Torre, Eric F.H.van Bommel, Nicolas Schleinitz

Table S3: IgG4-RD Responder Index

Scoring Rules

Scoring refers to manifestations of disease activity present in the last 28 days

Scoring: 0 Normal or resolved

1 Improved but still present

2 New / Recurrence while patient is off treatment or unchanged from the previous visit*

3 Worsened or new disease manifestation despite treatment

*Unchanged from previous visit will often refer to disease manifestations that require follow-up imaging to assess accurately

Definitions

Organ/Site score: The overall level of IgG4-RD activity within a specific organ system

Symptomatic: Is the disease manifestation in a particular organ system symptomatic? (Y = yes; N = no)

Urgent disease: Disease that requires treatment immediately to prevent serious organ dysfunction (Y = yes; N = no)

(*Presence of **urgent disease** within an organ leads to **DOUBLING** of that organ system score*)

Damage: Organ dysfunction that has occurred as a result of IgG4-RD and is considered permanent (Y = yes; N = no)

	Activity			**Damage**	
Organ/Site	Organ/Site Score (0-3)	Symptomatic (Yes/No)	Urgent (Yes/No)	Yes/No	Symptomatic (Yes/No)
Meninges					
Pituitary Gland					
Orbital lesion (specify location): _____					
Lacrimal Glands					
Parotid Glands					
Submandibular Glands					
Other Salivary Glands (specify):					

_____					
Mastoiditis / Middle ear disease					
Nasal Cavity Lesions					
Sinusitis					
Other ENT Lesions, e.g., tonsillitis, pharyngitis (specify): _____					
Thyroid					
Lungs					
Lymph Nodes (please circle site of involvement, below):					
Submental Submandibular Cervical Axillary Mediastinal Hilar Abdominal/Pelvic Inguinal Other lymph node chains:					

	Activity			**Damage**	
Organ/Site	Organ/Site Score (0-3)	Symptomatic (Yes/No)	Urgent (Yes/No)	Yes/No	Symptomatic (Yes/No)
Aorta / Large Blood Vessels					
Heart/Pericardium					
Retroperitoneal Fibrosis					
Sclerosing Mediastinitis					
Sclerosing Mesenteritis					
Pancreas					
Liver					
Bile ducts					
Kidney					
Skin					
Constitutional symptoms not attributable to involvement of a particular organ (weight loss, fever, fatigue caused by active IgG4-RD)					
Other involvement - specify:					

(Consider prostate, breast, gallbladder involvement; and other. Each “Other” item is counted separately.) _____ _____	_____ _____	_____ _____	_____ _____	_____ _____	_____ _____

Total Activity Score

Organ/sites (x 2 if urgent): _____

Total **urgent** organs: _____

Total **symptomatic (active)** organs: _____

Total **damaged** organs: _____

Total **symptomatic (damage)** organs: _____