Annex F

ENDOSCOPY

Summary of advice

Annex F provides the definitive UK guidance on decontamination of flexible endoscopes for TSE infection prevention and control.

The specific recommendations in this guidance are complementary to national guidance on all aspects of endoscope decontamination such as Choice Framework for local Policy and Procedures 01-06 (CFPP 01-06)[i] and the British Society of Gastroenterology (BSG) Guidance on Decontamination of Equipment for Gastrointestinal Endoscopy[ii].

Annex F provides specific advice for the management of instruments used in all types of endoscopic procedures. This advice differs depending on the type of CJD that a patient has been diagnosed with, or for which symptoms are being investigated, and for those who are asymptomatic but for whom an increased risk of developing disease has been identified. It is important to note that the risks from CJD and vCJD are different, as the distribution of infectivity in tissues and body fluids differs (see Annex A1)

Paragraphs F4 to F27 set out the guidance for each circumstance in detail, while summary advice is provided in table F1 and table F2a.

Endoscopes currently in quarantine

Advice is given below regarding endoscopes that have been held in quarantine following previous use on patients who are “at increased risk” of vCJD.

Endoscopes that have been placed into quarantine on or after 1 January 2010, assuming not used to treat one of the patient categories described at paragraphs F21 to F24 should be reviewed as follows:

1) Was the endoscope properly decontaminated using a validated process prior to quarantine?

2) Is there tracking to demonstrate (1)?

3) Has the endoscope been stored properly whilst in quarantine (in a drying cabinet or at least positioned vertically, not coiled up in a case)?

If all the above are met, the endoscope can be returned to use. If the endoscope has been out of use for more than a few months it is recommended that it is returned to the manufacturer for service and a check of handling characteristics before returning to use.

Published: September 2004
Revised and updated: October 2015

Previous revision date: February 2015
Changes new to this edition:

Date	Change	Notes
October 2015	Correction to a statement from the introductory section covering "Endoscopes currently in quarantine"	None

Published: September 2004
Revised and updated: October 2015

F1. The general procedures set out in the ***Choice Framework for local Policy and Procedures 01-06 – Decontamination of flexible endoscopes: Policy and Management (CFPP 01-06)***[i] or equivalent national guidance and the ***BSG Guidance on Decontamination of Equipment for Gastrointestinal Endoscopy***[ii] (2014) should be followed. In order to decrease the risk of transmission of TSEs through endoscopic procedures, additional precautions for the decontamination of flexible endoscopes used in all patients with definite, probable or possible CJD/vCJD, and in those identified as "at increased risk" of developing CJD/vCJD, are recommended and general precautions are reinforced in this Annex:

(a) Channel cleaning brushes and, if biopsy forceps or other accessories have been passed, the rubber valve on the endoscope biopsy/instrument channel port should be disposed of as clinical waste after each use. Single use (*i.e.* disposable) biopsy forceps should be used routinely in all patients. This guidance endorses the advice of the BSG that endoscope accessories should be single use wherever possible. It is essential to have systems in place that enable endoscopes, together with all their detachable components and any re-used accessories, to be traced to the patients on whom they have been used.

(b) As defined below, endoscopes used for certain procedures in the CNS and nasal cavity in individuals with possible sporadic CJD, or in whom the diagnosis is unclear[iii], should be removed from use or quarantined pending diagnosis or exclusion of CJD (see Table F1 for clarity of this issue). The principles and procedures recommended for quarantining of surgical instruments in Annex E of this guidance should be followed, except the endoscope should be fully cleaned and decontaminated immediately after use, before being quarantined.

(c) Endoscopes other than those used in the CNS and nasal cavity, which have been used for invasive procedures in most individuals[iv] designated as "at increased risk" of vCJD, can be decontaminated to the standards set out in *CFPP 01-06* or equivalent national guidance and the *BSG guidance* and returned to use (see Table F2a). The endoscope should be put through all the normal stages of cleaning, and be disinfected separately from other equipment within an automated Endoscope Washer Disinfector (EWD).

(d) Aldehyde disinfectants with fixative qualities (such as glutaraldehyde and OPA) tend to stabilise rather than inactivate prions, and are no longer recommended for use in the UK. Non-fixative disinfectants are used instead.

(e) When decontaminating endoscope cleaning equipment, the EWD should be put through an "empty" self-disinfection cycle as per recommended routine. Provided that the cleaning

[i] CFPP 01-06 was published in June 2012 by the Department of Health and can be accessed via https://www.gov.uk/government/publications/management-and-decontamination-of-flexible-endoscopes

[ii] BSG Guidance on Decontamination of Equipment for Gastrointestinal Endoscopy (2014) at http://www.bsg.org.uk/clinical-guidelines/endoscopy/guidelines-for-decontamination-of-equipment-for-gastrointestinal-endoscopy.html

[iii] Patients with neurological disease of unknown aetiology who do not fit the criteria for possible CJD but where a diagnosis of CJD is being actively considered (see Annex B of this guidance)

[iv] This excludes a small number of asymptomatic individuals "at increased risk" of vCJD because they have received blood from a donor who later developed vCJD. Endoscopes used to treat these patients should be removed from use or quarantined to be re-used exclusively on the same individual. See Table F2a.

Published: September 2004
Revised and updated: October 2015

equipment is decontaminated as indicated, there is no known risk of transmission of TSE agents via this route.

(f) Following use in patients at risk of vCJD endoscopic accessories (including normally reusable devices such as heater probes) and cleaning aids such as brushes should be disposed of by incineration.

F2. The bedside clean should take place immediately after the procedure has been carried out, and it is recommended that the endoscopes should be manually cleaned according to the manufacturers' recommendations, and passed through an EWD as soon as possible after use and in any case no more than 48 hours after the end of the procedure.

F3. PrP^{res} has been detected in the olfactory epithelium, but not the respiratory epithelium, of sporadic CJD patients (see paragraph 4.5 of Part 4 of this guidance). The olfactory epithelium is normally located along the roof of the nasal cavity but its distribution varies between individuals. On the lateral wall it may extend inferiorly onto the superior turbinate and the anterior insertion of the middle turbinate; on the medial wall it may extend onto the uppermost part of the septum. The advice of the consultant carrying out the endoscopic procedure in the nasal cavity should be sought to determine whether a risk of contamination of the endoscope with olfactory epithelium can be excluded with confidence. If such contamination cannot be excluded, precautions should be taken appropriate for medium infectivity tissues.

Definitions

F4. The definitions of different types of patients are as set out in:
paragraphs 4.17– 4.18 and Table 4a in Part 4; and
Annex B of this guidance.

Sporadic and other non-variant CJD

This includes sporadic CJD, sporadic fatal insomnia, VPSPr, iatrogenic CJD (other than iatrogenically acquired variant CJD), and genetic CJD, FFI and GSS.

Symptomatic sCJD patients (definite, probable)

F5. Neurological endoscopes would not normally be used on patients whose diagnosis is definite or probable sCJD. However, should such use be necessary, the endoscope should be single use if possible. If this is not feasible or appropriate, the endoscope should be removed from use or destroyed.

F6. Endoscopes that come into contact with the nasal cavity may, on occasion, be used in patients with definite or probable sCJD. If there is a risk that the endoscope could become contaminated with olfactory epithelium (see paragraph F2 above), a single use endoscope should be used if possible. If this is inappropriate, the endoscope should be removed from use or destroyed (as above).

F7. For all other types of endoscopy, decontaminate according to *CFPP 01-06* or equivalent national guidance and the *BSG guidance* with the additional precautions for flexible endoscopes as set out in paragraph F1 above.

Published: September 2004
Revised and updated: October 2015

Symptomatic patients (possible sporadic, or diagnosis unclear, but variant CJD is **not** being considered)

F8. Neurological endoscopes would not normally be used on patients whose diagnosis is possible CJD or for whom the diagnosis of CJD is unclear. However, should use be necessary, a single use endoscope should be used if possible. If this is not appropriate, the re-usable endoscope should be quarantined pending a more definitive diagnosis. The quarantined endoscope may be re-used exclusively on the same individual patient if required. If further clarification of the diagnosis is not possible, the endoscope should be removed from use.

F9. Endoscopes that are used in the nasal cavity may, on occasion, be used in patients with definite or possible CJD. If there is a risk that the endoscope could become contaminated with olfactory epithelium (see paragraph F2 above), a single use endoscope should be used where possible. If this is not appropriate, the endoscope should be decontaminated singly as at F1(c-f), then quarantined pending a more definitive diagnosis. The quarantined endoscope may be re-used exclusively on the same individual (index) patient if required. If further clarification of the diagnosis is not possible, the endoscope should either be removed from use or retained for sole use on the index patient.

F10. For all other types of endoscopy, decontaminate according to *CFPP 01-06* or equivalent national guidance and the *BSG guidance*, with the additional precautions for flexible endoscopes as set out in paragraph F1 above.

Asymptomatic patients "at increased risk" of CJD (other than variant CJD)

F11. No special precautions are required for the use, in patients "at increased risk" of CJD, of rigid endoscopes without lumens that can be autoclaved. The guidance in Part 4 of this guidance for all surgical instruments can be followed.

F12. For other types of endoscope that are used for central nervous tissue investigations, single-use instruments should be used if possible. Where this is not possible without compromising clinical standards, the endoscope should be removed from use. Alternatively the endoscope can be decontaminated singly, as at F1(c-f) then quarantined after use to be re-used exclusively on the same individual patient if required.

F13. If there is a risk that an endoscope used in the nasal cavity could become contaminated with olfactory epithelium (see paragraph F2 above), a single use endoscope should be used where possible. If this is not appropriate, the endoscope should be removed from use. Alternatively the endoscope can be quarantined after use to be re-used exclusively on the same individual patient if required. For some procedures, the endoscope may be protected from contamination by a disposable sheath, which should then be destroyed by incineration. However, this does not obviate the need for routine decontamination following use on a patient. Additionally, in practice, it may be difficult to ensure effective protection, and advice should be sought from the surgical staff carrying out the procedure and the manufacturer of the endoscope to determine the practicality of this option.

F14. For all other types of endoscopy, decontaminate according to *CFPP 01-06* or equivalent national guidance and the *BSG guidance.*

Published: September 2004
Revised and updated: October 2015

Variant CJD & CJD type uncertain

Symptomatic vCJD patients (definite, probable)

F15. Neurological endoscopes would not normally be used on patients whose diagnosis is definite or probable vCJD. However, should such use be necessary, the endoscope should be single use if possible. If this is not feasible or appropriate, the endoscope should be removed from use.

F16. Endoscopes that come into contact with the nasal cavity may, on occasion, be used in patients with definite or probable vCJD. If there is a risk that the endoscope could become contaminated with olfactory epithelium (see paragraph F2 above), a single use endoscope should be used if possible. If this is inappropriate, the endoscope should be removed from use.

F17. For all other types of endoscopy, providing decontamination of the endoscope is to approved standards, the use of the instrument for inspection in the absence of an invasive procedure, as defined in Table F2b, is deemed to be of low risk. If biopsy or another invasive procedure is carried out, the possibility of contamination of the instrument channel with lymphoid tissue means the endoscope should be decontaminated singly as at F1(c-f), then quarantined pending assessment of likely contact with potentially infected tissue.

Symptoms consistent with vCJD (possible or unclear diagnosis[v])

F18. Neurological endoscopes would not normally be used on patients whose diagnosis is possible vCJD or for whom the diagnosis of vCJD is unclear. However, should such use be necessary, a single use endoscope should be used if possible or the endoscope should be decontaminated singly as at F1(c-f), then quarantined pending a more definitive diagnosis. The quarantined endoscope may be re-used exclusively on the same individual (index) patient if required. If further clarification of the diagnosis is not possible, the endoscope should either be removed from use or retained for sole use on the index patient.

F19. Endoscopes that are used in the nasal cavity may, on occasion, be used in vCJD patients, and there is a risk that the endoscope could be contaminated with infectivity from the olfactory epithelium. Single use instruments should be used where possible. If this is not feasible or appropriate, the endoscope should be decontaminated singly as at F1(c-f), then quarantined pending confirmation of the diagnosis. The quarantined endoscope may be re-used exclusively on the same individual (index) patient if required. If further clarification of the diagnosis is not possible, the endoscope should either be removed from use or retained for sole use on the index patient.

F20. For all other types of endoscopy, providing decontamination of the endoscope is to approved standards, the use of the instrument for inspection in the absence of invasive procedures as defined in Table F2b, is deemed to be a low risk procedure. If an invasive procedure is carried out, the possibility of contamination of the instrument channel with

[v] Patients with neurological disease of unknown aetiology who do not fit the criteria for possible vCJD but where a diagnosis of vCJD is being actively considered (see Annex B of this guidance)

Published: September 2004
Revised and updated: October 2015

lymphoid tissue means the endoscope should be decontaminated singly as at F1(c-f), then quarantined pending assessment of likely contact with potentially infected tissue. If this is considered possible and an alternative diagnosis is not obtained, the endoscope should be removed from use.

Asymptomatic patients "at increased risk" through receipt of labile blood components (whole blood, red cells, white cells or platelets) from a donor who later developed vCJD[vi]

F21. No special precautions are required for the use, of rigid endoscopes without lumens that can be autoclaved. The guidance in Part 4 of this guidance for all surgical instruments can be followed.

F22. Endoscopes that are used for central nervous tissue investigations may, on occasion, be used on patients "at increased risk" of developing vCJD and there is a risk that the endoscope could be contaminated with infectivity from the nerve tissue. Single use instruments should be employed if possible. Where this is not possible, the endoscope should be removed from use. Alternatively the endoscope can be decontaminated singly as at F1(c-f), then quarantined after use to be re-used exclusively on the same individual patient if required.

F23. If there is a risk that an endoscope used in the nasal cavity could become contaminated with olfactory epithelium (see paragraph F2 above), a single use endoscope should be employed where possible. If this is not feasible or appropriate, the endoscope should be removed from use. Alternatively the endoscope can be decontaminated singly as at F1(c-f)), then quarantined after use to be re-used exclusively on the same individual (index) patient if required. If further clarification of the diagnosis is not possible, the endoscope should either be removed from use or retained for sole use on the index patient.

F24. For all other types of endoscopy, providing decontamination of the endoscope is to approved standards, the use of the instrument for inspection in the absence of an invasive procedure, as defined in Table F2b, is deemed to be a low risk procedure. If an invasive procedure is carried out, the possibility of contamination of the instrument channel with lymphoid tissue means the endoscope should be decontaminated singly as at F1(c-f), then quarantined pending assessment of likely contact with potentially infected tissue. If this is considered possible the endoscope should be removed from use. For some procedures, it may be possible to shield the working channel of the endoscope from contamination by a disposable sheath. Once the procedure is completed, the tip of the accessory (e.g. biopsy forceps) is withdrawn into the sheath, before the tip of the sheath is cut off and, like the remainder of the sheath, is later destroyed by incineration.

All other asymptomatic patients "at increased risk" of vCJD

F25. No special precautions are required for the use, in all other patients "at increased risk" of vCJD, of rigid endoscopes without lumens that can be autoclaved. The guidance in Part 4 of this guidance for all surgical instruments can be followed.

[vi] These individuals may be identified at pre-surgical assessment - using Annex J in conjunction with Part 4 of this guidance.

Published: September 2004
Revised and updated: October 2015

F26. Endoscopes that are used for central nervous tissue investigations may, on occasion, be used on patients "at increased risk" of developing vCJD and there is a risk that the endoscope could be contaminated with infectivity from the nerve tissue. Single use instruments should be employed if possible. Where this is not possible, the endoscope should be removed from use. Alternatively the endoscope can be decontaminated singly as at F1(c-f), and quarantined thereafter to be re-used exclusively on the same individual patient if required.

F27. If there is a risk that an endoscope used in the nasal cavity could become contaminated with olfactory epithelium (see paragraph F2 above), a single use endoscope should be employed where possible. If this is not feasible or appropriate, the endoscope should be removed from use. Alternatively the endoscope can be decontaminated singly as at F1(c-f)), then quarantined after use to be re-used exclusively on the same individual (index) patient if required. If further clarification of the diagnosis is not possible, the endoscope should either be removed from use or retained for sole use on the index patient.

F278. For all other types of endoscopy, decontaminate according to *CFPP 01-06* or equivalent national guidance and the *BSG guidance*, with the additional precautions for flexible endoscopes as set out in paragraph F1 above.

Currently funded research

F29. Recent research funded by the Department of Health highlights the problems and limitations associated with the cleaning of endoscopes[vii]. The research centres on the build up of biofilms and protein deposits in the lumen of endoscopes as a result of abrasion and wearing through routine use and the use of forceps and other instruments inserted through the working channel of the instrument. It suggests that micro organisms can be displaced and spread through the cleaning process.

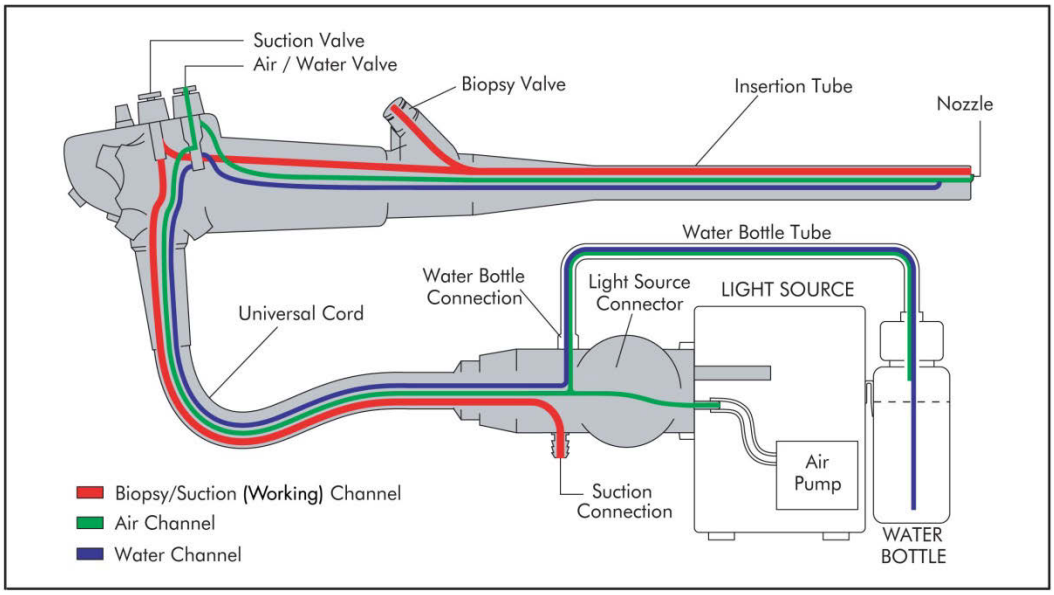
F30. Research into the efficiency of decontamination of endoscopes including manual cleaning processes is ongoing. Currently all endoscopes should be decontaminated according to *CFPP 01-06* or equivalent national guidance and the *BSG guidance*, with the additional precautions for flexible endoscopes as set out in paragraph F1 above, and this should be reflected in the local policy.

[vii] Hervé and Keevil 2013. Current limitations about the cleaning of luminal endoscopes. *Journal of Hospital Infection*, 83; 22-29

Published: September 2004
Revised and updated: October 2015

Definition of the working channel of an endoscope

F31 . The working channel of an endoscope is illustrated in the diagram below in red.



.

Published: September 2004
Revised and updated: October 2015

SUMMARY OF PRECAUTIONS ADVISED FOR THE USE OF ENDOSCOPES

Table F1 CJD - other than vCJD

Tissue Infectivity	Status of patient		
	Symptomatic		Asymptomatic
	Definite/ probable	Possible / diagnosis unclear[1]	At risk[2] inherited/ iatrogenic
High: • Brain • Spinal cord	single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient	single use OR quarantine pending diagnosis	single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient
Medium: • Olfactory epithelium*	single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient	single use OR quarantine pending diagnosis	single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient
Low/none detectable: • All other tissues	no special precautions[4]	no special precautions[4]	no special precautions[4]

Published: September 2004
Revised and updated: August 2014

Table F2a. vCJD and CJD type uncertain

Tissue Infectivity	Status of patient			
	Symptomatic		Asymptomatic	
	Definite /probable	**Possible vCJD, possible sCJD or diagnosis unclear[1]**	**At risk (blood[***] recipient from a donor who later developed vCJD)**	**At risk[2] Other iatrogenic**
High: • Brain • Spinal cord	single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient	single use OR quarantine pending diagnosis	single use OR destroy after use OR quarantine[3] for re-use exclusively on same patient	single use OR destroy after use OR quarantine[3] for re-use exclusively on same patient
Medium: • Olfactory epithelium*	single use OR remove from use OR quarantine[3] for re-use exclusively on the same index patient	single use OR quarantine pending diagnosis	single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient	no special precautions unless contaminated with olfactory epithelium* If contaminated: single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient
Medium: Lymphoid tissue**	single use OR remove from use OR quarantine[3] for re-use exclusively on the same index patient	single use OR quarantine pending diagnosis	single use OR destroy after use OR quarantine[3] for re-use exclusively on the same index patient	no special precautions[4]
Low/none detectable: • All other tissues	no special precautions[4]	no special precautions[4]	no special precautions[4]	no special precautions[4]

Published: September 2004
Revised and updated: August 2014

Notes

* The advice of the consultant carrying out the endoscopic procedure in the nasal cavity should be sought to determine whether a risk of contamination of the endoscope with olfactory epithelium can be excluded with confidence. If such contamination cannot be excluded, take precautions appropriate for medium infectivity tissues.

**For the purposes of this Annex, lymphoid tissue refers to the spleen, thymus, tonsils and adenoids, lymph nodes, the appendix and the gastro-intestinal tract sub-mucosa.

***A small number of individuals are known to have received labile blood components (whole blood, red cells, white cells or platelets) from a donor who later developed vCJD.

[1] This includes patients with neurological disease of unknown aetiology who do not fit the criteria for possible CJD but where a diagnosis of CJD is being actively considered (see also Annex B of this guidance).

[2] This advice refers to the use of flexible endoscopes in patients at risk of developing CJD. For guidance on the use of rigid endoscopes that can be autoclaved, refer to the guidance for the use of all surgical instruments in at risk patients in Part 4 of this guidance.

[3] Quarantined endoscopes may be re-used exclusively on the same individual patient if required. The principles behind the procedures recommended for quarantining of surgical instruments in Annex E of this Guidance should be followed except the endoscope should be fully cleaned and decontaminated immediately after use, before being quarantined. The endoscope should be decontaminated alone using an Automatic Endoscope Washer Disinfector (EWD). The EWD should be decontaminated as per paragraph F1(e) of this guidance.

[4] The decontamination procedures advised in paragraph F1 of this guidance, taken together with the ***CFPP 01-06*** or equivalent national guidance and ***BSG Guidance for Decontamination of Equipment for Gastrointestinal Endoscopy*** (2014) should be followed (http://www.bsg.org.uk/clinical-guidelines/endoscopy/guidelines-for-decontamination-of-equipment-for-gastrointestinal-endoscopy.html).

Published: September 2004
Revised and updated: August 2014

Table F2b. Common flexible endoscopic procedures classified as invasive or non-invasive. (vCJD and CJD type uncertain).

The term "working channel" applies to the endoscope channel that is used for both the passage of accessories and the suction removal of liquids and gases.

	Procedure	Contamination of working channel	Mechanism	Invasive (+) or Non-Invasive (–)	Notes/ Exceptions
1	**ARTHROSCOPY, BRONCHOSCOPY AND CYSTOSCOPY**				
1a	All arthroscopy procedures	These procedures will not involve contact of the endoscope with infectious tissue.	None	–	
1b	Diagnostic cystoscopy or * bronchoscopy	Providing no biopsy is taken it is very unlikely that the endoscope will become contaminated*.	None. Tissue contamination would not result from a straightforward diagnostic procedure.	–	
1c	Cystoscopy with biopsy to obtain fixed lymphoid tissue	When a biopsy is taken of lymphoid tissue, there is a risk that the working channel could become contaminated with potentially infectious tissue.	Lymphoid tissue could come into contact with the lining of the working channel. Tissue may be deposited in the working channel.	+	Biopsy of the bladder can be considered non-invasive (-) if it can be determined with confidence that there has been no contact with, or invasion of, lymphoid tissue.
1d	Bronchoscopy with biopsy to obtain fixed lymphoid tissue	When a biopsy is taken of lymphoid tissue, there is a risk that the working channel could become contaminated with potentially infectious tissue.	Lymphoid tissue could come into contact with the lining of the working channel. Tissue may be deposited in the working channel.	+	Bronchoscopy with biopsy can be considered non-invasive (-) if it can be determined with confidence that there has been no contact with, or invasion of, lymphoid tissue.

Table F2b published: November 2005
revised and updated: June 2008

1e	Transbronchial biopsy	There is a risk that the working channel may become contaminated with lymphoid tissue during transbronchial biopsy.	Lymphoid tissue could come into contact with the lining of the working channel. Tissue may be deposited in the working channel.	**+**	
2	**ENDOSCOPIC ULTRASOUND (EUS)**				
2a	Diagnostic EUS	Providing no biopsy is taken it is very unlikely that the endoscope will become contaminated.	None. Tissue contamination would not result from a straightforward diagnostic ultrasound procedure.	**–**	
2b	EUS with biopsy	Biopsy utilises a needle that may result in contamination of the working channel with lymphoid tissue.	The needle is sheathed and therefore not in contact with working channel	**–**	
3	**UPPER GI ENDOSCOPY**				
3a	* Diagnostic gastroscopy	Providing no biopsy is taken it is very unlikely that the endoscope will become contaminated*.	None. Tissue contamination would not result from a straightforward diagnostic endoscopy.	**–**	

Table F2b published: November 2005
revised and updated: June 2008

3b	Gastroscopy with biopsy	Even with efficient single use forceps contamination of the working channel with submucosal lymphoid tissue is likely.	Contaminated tissue may come into contact with the lining of the endoscope working channel. Tissue may be deposited on the internal surface of the working channel. Decontamination not proven to remove the infective agent.	**+** (but see exception, right)	Cytology is of negligible risk provided a sheathed technique is used. Alternatively cytology (using a sheathed cytology device) could be taken at the first gastroscopy if malignancy is strongly suspected. Some larger channel endoscopes allow the passage of a sheath through which biopsy may be done while protecting the endoscope working channel from tissue contamination. Following biopsy, the tip of the biopsy forceps is fully retracted into the sheath, the tip of which is kept protruding from the endoscope tip throughout. The practice of taking a single biopsy and removing the endoscope with the forceps protruding, and then severing it with wire cutters, is to be discouraged.

Table F2b published: November 2005
revised and updated: June 2008

3c	Gastroscopy with brush cytology	The cytology brush is sheathed and therefore there is low risk of the working channel becoming contaminated with lymphoid tissue. Cytology is of negligible risk provided a sheathed technique is used.	No contact of lymphoid tissue with the working channel.	–	
3d	Gastroscopy and balloon dilatation of stricture (oesophagus or pylorus).	Balloon dilatation may disrupt submucosal lymphoid tissue, which could be transferred to the working channel as the balloon is retracted back into this channel.	Contamination would be through 'contact' and would be lower than biopsy. Modifying the technique to include removing the endoscope and used balloon as one (without retracting it back into the working channel) would minimise the risk.	–	This technique should be considered non-invasive ONLY if the endoscope and balloon are withdrawn from the patient as one (*i.e.* without retracting the balloon into the working channel) and the balloon is cut-off and destroyed.
3e	Gastroscopy and bougie dilatation of oesophagus.	Bougie dilatation over a guide wire involves disruption of submucosal tissue only when the endoscope has been withdrawn.	No contamination of the working channel with lymphoid tissue.	–	

Table F2b published: November 2005
revised and updated: June 2008

3f	Gastroscopy and polypectomy	Polypectomy snares use diathermy, which coagulates tissue and this adheres to the snare. Although the snare is sheathed it is possible for lymphoid tissue to contaminate the working channel.	Polyp tissue fragments are readily sucked into the working channel during and after polypectomy.	**+** (but see exception, right)	Some endoscopists advocate the use of slow continuous irrigation of the working channel with water during polypectomy in order to minimise the risk of polyp fragments coming into contact with the internal surface of the endoscope working channel. Experience is, however, limited, and if polyp fragments become aspirated into the working channel (as is normally the case) the procedure is immediately deemed invasive.
3g	Gastroscopy and endoscopic mucosal resection (EMR)	The risks are the same as for polypectomy but the disruption of submucosal lymphoid tissue will be greater. A diathermy current is used and tissue will adhere to the snare.	Polyp tissue fragments are readily sucked into the working channel during and after EMR.	**+** (but see exception, right)	Some endoscopists advocate the use of slow continuous irrigation of the working channel with water during polypectomy in order to minimise the risk of polyp fragments coming into contact with the internal surface of the endoscope working channel. Experience is, however, limited, and if polyp fragments become aspirated into the working channel (as is normally the case) the procedure is immediately deemed

Table F2b published: November 2005
revised and updated: June 2008

					invasive.
3h	Gastroscopy or enteroscopy and argon plasma coagulation	In theory the technique involves no contact with the mucosa. However contact frequently occurs and tissue adheres to the catheter.	Tissue is likely to enter the working channel.	+	
3i	Gastroscopy and use of heater probe	Can be used to arrest bleeding but tissue may adhere to the probe and contaminate the working channel.	Lymphoid tissue contamination of the working channel is possible.	+	Heater probe should be discarded after use and disposed of by incineration.
3j	Gastroscopy and injection of ulcer	This may be a necessary procedure and haemostasis may be achieved through a variety of methods. Injection of adrenaline would not disrupt submucosal lymphoid tissue but there is contact between the needle and submucosal tissue.	Good technique would minimise risk. The needle is sheathed and therefore not in contact with the working channel. Poor technique might result in the unsheathed needle coming into contact with the channel, rendering the procedure invasive.	–	
3k	Gastroscopy and injection of varices	This may be a necessary procedure and haemostasis may be achieved through a variety of methods. Injection of a sclerosing agent would not disrupt submucosal lymphoid tissue but there is contact between the needle and submucosal tissue.	Good technique minimises the risk. The needle is sheathed and therefore not in contact with the working channel. Poor technique might result in the unsheathed needle coming into contact with the channel, rendering the procedure invasive.	–	

Table F2b published: November 2005
revised and updated: June 2008

3l	Gastroscopy and banding of varices	Bands are applied to prominent veins in the oesophagus. Submucosal lymphoid tissue should not be disrupted and in theory the risk should be low.	Tissue does not come into contact with the working channel during banding.	–	
3m	Gastroscopy and mucosal clipping	No disruption of lymphoid tissue.	No contamination of biopsy channel with lymphoid tissue.	–	
3n	Gastroscopy and insertion of a PEG (Percutaneous Endoscopic Gastrostomy) feeding tube	Patients with vCJD may require a PEG feeding tube. Contamination of the biopsy channel is possible with some techniques.	The most common 'pull through' method does involve a needle penetrating the stomach via the abdominal wall. In theory a small amount of submucosal lymphoid tissue might adhere to the needle and transfer to the wire or thread, which is pulled up via the working channel. However, the wire or thread can be withdrawn without entering this channel if the technique is modified so that the endoscope and wire or thread are withdrawn with the grasping device in full view (*i.e.* not withdrawing the wire or thread into the endoscope).	– if modified technique is used	Non-endoscopic (radiological) gastrostomy is recommended if possible. However, if this is not an option, the modified PEG technique must be used. This means that the endoscope and wire or thread are withdrawn with the grasping device in full view (*i.e.* the wire or thread is NOT withdrawn into the endoscope). If the wire or thread is withdrawn into the endoscope, the procedure must be considered invasive.
3o	Gastroscopy and stenting	No contact between working channel and lymphoid tissue.	Insertion of oesophageal stents does not disrupt lymphoid tissue during placement as the endoscope has been withdrawn and even with rescoping the working channel is unlikely to become contaminated.	–	

Table F2b published: November 2005
revised and updated: June 2008

3p	Gastroscopy and drainage of pancreatic pseudocysts	This is an invasive procedure that is potentially liable to contaminate the biopsy channel.	Contact between working channel with gastric submucosal lymphoid tissue is possible.	+	
4	**ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATO-GRAPHY (ERCP)**				
4a	ERCP without sphincterotomy	It is unlikely that the endoscope will become contaminated.	No contamination of the working channel with lymphoid tissue.	–	
4b	ERCP with sphincteroplasty	There is a significant risk that the biopsy channel will become contaminated with lymphoid tissue.	It is necessary to withdraw the dilatation balloon via the working channel of the endoscope so contamination with lymphoid tissue is possible. Subsequent manoeuvres to remove stones from the bile duct using retrieval balloons or baskets could contaminate the duodenoscope working channel.	+	
4c	ERCP with sphincterotomy	The diathermy papillotomy knife used in this procedure frequently has adherent tissue and it is likely that the working channel could become contaminated with lymphoid tissue.	Adherent tissue may be deposited in the working channel as the sphincterotome is withdrawn. Subsequent manoeuvres to remove stones from the bile duct using retrieval balloons or baskets could also contaminate the duodenoscope working channel.	+	
5	**ENTEROSCOPY**				
5a	Enteroscopy without biopsy	Tissue contamination of the working channel is very unlikely.	No contamination would result from a straightforward diagnostic enteroscopy.	–	

Table F2b published: November 2005
revised and updated: June 2008

5b	Enteroscopy with biopsies	It is likely that the working channel will become contaminated with lymphoid tissue.	Contaminated tissue may be deposited in the working channel.	**+**	It may be feasible to perform biopsy non-invasively if long-sheathed biopsy forceps become available
6	**COLONOSCOPY**				
6a	Colonoscopy without biopsy	A diagnostic colonoscopy is unlikely to contaminate the working channel with submucosal lymphoid tissue.	No contamination would result from a straightforward diagnostic colonoscopy.	**–**	
6b	Colonoscopy and biopsy	It is likely that the working channel will become contaminated with ileal submucosal tissue or colonic submucosal lymphoid aggregates.	Contamination of the working channel very likely.	**+** (but see exception, right)	Sheathed biopsy, where feasible, may allow tissue sampling while avoiding the risk of working channel contamination. Following biopsy, the tip of the biopsy forceps is fully retracted into the sheath, the tip of which is kept protruding from the endoscope tip throughout. The practice of taking a single biopsy and removing the endoscope with the forceps protruding, and then severing it with wire cutters, is to be discouraged.

Table F2b published: November 2005
revised and updated: June 2008

6c	Colonoscopy and balloon dilatation procedure	Balloon dilatation of an inflammatory stricture would disrupt lymphoid tissue and contaminate the balloon.	Withdrawing the balloon through the working channel would contaminate the colonoscope.	**–**	This technique should be considered non-invasive ONLY if the endoscope and balloon are withdrawn from the patient as one (*i.e*. without retracting the balloon into the working channel) and the balloon is cut-off and destroyed.
6d	Colonoscopy and polypectomy	Coagulation of tissue which then adheres to the snare. Sometimes small polyps retrieved using the suction channel and a biopsy "trap" This would increase the risk of contamination with lymphoid tissue.	Polyp tissue fragments are readily sucked into the working channel during and after polypectomy.	**+** (but see exception, right)	Some endoscopists advocate the use of slow continuous irrigation of the working channel with water during polypectomy in order to minimise the risk of polyp fragments coming into contact with the internal surface of the endoscope working channel. Experience is, however, limited, and if polyp fragments become aspirated into the working channel (as is normally the case) the procedure is immediately deemed invasive.

Table F2b published: November 2005
revised and updated: June 2008

6e	Colonoscopy and endoscopic mucosal resection	As with biopsy, lymphoid tissue may contaminate the biopsy channel.	Tissue adheres to the snare which would have to be withdrawn through the colonoscope on most occasions. Polyp tissue fragments are readily sucked into the working channel during and after EMR.	**+** (but see exception, right)	Some endoscopists advocate the use of slow continuous irrigation of the working channel with water during EMR in order to minimise the risk of polyp fragments coming into contact with the internal surface of the endoscope working channel. Experience is, however, limited, and if polyp fragments become aspirated into the working channel (as is normally the case) the procedure is immediately deemed invasive.
6f	Colonoscopy and argon plasma coagulation	Adherent tissue is likely to contaminate the suction/biopsy channel.	Contact with lymphoid tissue frequently occurs and tissue adheres to the catheter. Tissue is likely to enter the working channel.	**+**	
6g	Colonoscopy and stenting	No contact between working channel and lymphoid tissue.	Insertion of colonic stents does not disrupt lymphoid tissue during placement as the endoscope has been withdrawn and even with rescoping the working channel is unlikely to become contaminated.	**–**	

Table F2b published: November 2005
revised and updated: June 2008

7	FLEXIBLE SIGMOIDOSCOPY				
7a	Flexible sigmoidoscopy	This diagnostic procedure is unlikely to result in contamination of the working channel.	No contamination of the channel with lymphoid tissue would occur.	–	For 'invasive' procedures the risks are identical to those procedures associated with colonoscopy (see above)

Notes

* Where intubation is via the nasal cavity the advice of the endoscopist performing the procedure should be sought to determine whether a risk of contamination of the endoscope with olfactory epithelium can be excluded with confidence. If such contamination cannot be excluded it is advised to intubate *via* an oral route or take precautions appropriate for medium infectivity tissues.

Table F2b published: November 2005
revised and updated: June 2008