



A RE-ASSESSMENT OF THE POTENTIAL RISK OF VCJD TRANSMISSION VIA DENTISTRY

ISSUE

1. The Department of Health (DH) has asked SEAC to consider an interim assessment of the potential risk of vCJD transmission via dental procedures. This work builds on previous risk assessments on possible dental transmission considered by SEAC.

BACKGROUND

Previous SEAC considerations of vCJD transmission via dentistry

2. At SEAC 62 (July 2000), SEAC considered the potential risk of secondary transmission of vCJD from dental surgery. The committee concluded that there were no grounds, at that time, for recommending changes to procedures involving dentistry. However, improved cleaning and sterilisation practices were reported as reducing potential transmission risks and SEAC recommended that:
 - research be undertaken to examine the infectivity of, and presence of abnormal prion protein in, oral tissues from vCJD patients; and
 - an assessment be made of the transmission risks from dental procedures using the risk assessment on surgery¹ endorsed by SEAC as a basis.
3. In 2003, SEAC endorsed an assessment produced by DH on the potential risk of vCJD transmission through the use of dental instruments². The risk assessment considered that vCJD transmission from an infected individual might occur from (i) abrasion of tonsils (known to carry vCJD infectivity) or (ii) other

¹An updated version of the Risk Assessment for Surgery (2005) is at <http://www.dh.gov.uk/assetRoot/04/11/35/42/04113542.pdf>

²DH ESOR Risk Assessment for vCJD and Dentistry (2003). <http://www.dh.gov.uk/assetRoot/04/07/83/02/04078302.PDF>

potentially infective material such as dental pulp (shown to be infective in a previous rodent study) resulting in the adhesion of infective material onto an instrument. Since some residual infectivity could survive normal decontamination processes, either mechanism could provide a potential route for transmission. On the basis of assumptions made about the prevalence of infection, infectivity of tonsil tissue and the frequency of tonsillar abrasion during dentistry, it was estimated that the risk of infection via tonsillar abrasion would be very low (between 10^3 to 10^9 times less than tonsillectomy). The assessment noted that if tissues such as dental pulp were infective, then the transmission risks associated with dentistry could be significantly higher. Overall, this route appeared to be of less potential significance than hospital surgery or blood transfusion. Nevertheless, the risk assessment concluded by stressing the importance of good decontamination in dentistry, and of keeping the situation under review as new evidence emerged.

4. In 2005, the SEAC Epidemiology Subgroup considered DH risk assessments of secondary transmission of vCJD through surgery, blood transfusion, bone / tissue / organ transplantation and dentistry. In terms of the potential to drive a self sustaining epidemic, the Subgroup noted that although the risk of transmission via dentistry per procedure is thought to be relatively low, the large number of dental procedures, coupled with good patient survival, implies that any significant risk via that route could have a major impact on the dynamics of secondary infection. Furthermore, uncertainties in key parameters in all the previous risk assessments remained. These include, the profile of the primary epidemic, infectivity levels in tissues, transmission efficiencies via different routes and the effectiveness of decontamination / infectivity reduction methods. The Subgroup noted that interactions between potential routes of transmission would make a self-sustaining epidemic more likely³.
5. At SEAC 91 (February 2006) the committee considered a programme of research started at the Health Protection Agency (HPA) to improve understanding of the potential risks of transmission of vCJD by dental procedures. This was considered alongside a preliminary DH risk assessment on the implications of a carrier state for a possible self sustaining epidemic of vCJD due to endodontic dentistry (procedures which include root canal treatment). The committee published a statement (annex 1) and:

³ SEAC epidemiology subgroup position statement on the vCJD epidemic.
<http://seac/statements/state260106subgroup.htm>

- noted the importance of knowing the prevalence of vCJD in the general population and obtaining further data to quantify the transmission risks from dentistry to allow the assessment to be refined.
 - noted that, although there are uncertainties around the data and assumptions underpinning the assessment, a potential risk of a self sustaining epidemic existed.
 - recommended that, since decontamination of dental instruments was difficult, serious consideration should be given to making certain endodontic dental instruments single use, where practicable.
 - proposed that consideration should be given to the improvement of decontamination practices in dentistry.
6. Following SEAC 91, DH commissioned the HPA to undertake further studies of TSE infectivity in dental tissues, using a mouse model and BSE. In March 2007, DH received emerging results from these studies which supported the possibility that endodontic files and reamers could pose an effective route of transmission of infection. In response, the Chief Dental Officer issued guidance to all dentists on 19 April 2007 that endodontic files and reamers should be treated as single use and that dentists should ensure the highest possible standards of instrument decontamination are observed for all instruments.
7. At SEAC 97 (May 2007) DH asked SEAC to comment on these emerging results. The committee published a position statement (annex 2) and:
- agreed that the data and conclusions appeared robust, while recognising that they are preliminary data from an animal model and that the studies were not yet complete.
 - concluded that the research suggested that there may be a significant risk that vCJD can be transmitted via some dental procedures, although the level of risk remains difficult to quantify.
 - welcomed the Chief Dental Officers' guidance to dentists in April 2007 advising them to ensure that all dental files and reamers were treated as single use, but sought reassurance that compliance in both private and NHS practice would be closely monitored.
 - considered it important that a comprehensive assessment of the potential risks of vCJD transmission from all dental procedures be conducted as a priority.

The New DH Risk Assessment

8. The research on infectivity just noted forms one strand of a wider programme at the HPA, which is also intended to quantify protein residues found on dental instruments and the effectiveness of sterilisation in reducing infectivity. Following SEAC 97 (May 2007), DH commissioned a comprehensive re-assessment of the potential risks of vCJD transmission associated with dentistry to take account of research at the HPA and elsewhere. The assessment aims to clarify the range of plausible scenarios for vCJD transmission via dental instruments that *could* occur, given what is currently known, and to identify the most important factors affecting this risk. The assessment will be used to identify the most important areas of further work to address the uncertainties and any robust ways of cost effectively reducing risks further.

9. This new interim risk assessment has been produced by DH analysts (annex 3) in collaboration with a Scientific Reference Group of independent experts (Chaired by Professor Graham Medley). Members of the Group have expertise in dentistry, instrument decontamination, human and animal prion diseases, anatomy, public health, risk assessment modelling and epidemiology. This group met three times to review and refine the modelling framework and agree the risk assessment. The group provided advice on the inputs and assumptions incorporated into the risk assessment, particularly where expert judgement was required due to a lack of hard data. Under circumstances where key data are absent, precautionary assumptions were agreed. As a number of large uncertainties that strongly influence the quantification of risk remain, the risk assessment is considered as interim and will be updated in the future when new scientific evidence becomes available.

10. The assessment examines the risk that vCJD may be transmitted via dental procedures by establishing plausible ranges for key parameters, including (see sections 2 and 3 of the risk assessment):
 - the vCJD infectivity of tissues of the oral cavity of infected patients
 - the deposition of that material onto different types of dental instruments and the effectiveness of standard cleaning and sterilisation processes used in dental practice
 - the mechanisms and efficiency of transfer of vCJD infectivity from contaminated instruments used on subsequent patients

- the probability of transmission based on assessments of the number and types of dental procedure conducted and the number of people who might be carrying an asymptomatic vCJD infection.

Findings

11. As there is lack of substantial data with which to accurately quantify many of these parameters, plausible ranges for these parameters have been established to take account of the often large uncertainties in the data. The large uncertainties in many of these parameters strongly influence the quantification of the risk.
12. Plausible scenarios built up using ranges for each of these factors include many in which dental transmission would have no detectable effect on the course of the vCJD outbreak (see section 4 of the risk assessment). However, there are some which include a combination of pessimistic assumptions as regards the infectivity of dental / oral tissues and the effects of instrument decontamination which suggest that:
 - there could be some hundreds of vCJD transmissions per annum via dentistry - albeit against a background of several thousand existing vCJD infections (not *clinical cases* of vCJD), or where
 - dental transmission could generate a self-sustaining reservoir of vCJD infection within the population.
13. The distinction between vCJD *infections* and *clinical cases* of vCJD is important. If a large proportion of secondary transmissions result in subclinical infections (either never developing into clinical disease or doing so over an extended time-scale) and those infected are *infectious*, the likelihood of a self-sustaining epidemic increases. The proportion of individuals who might enter such a subclinical “carrier state” is unknown.

Key Assumptions and areas of uncertainty

14. Work on the risk assessment is on-going and new data should enable some of the inputs and assumptions underpinning these scenarios to be revised. Key areas of uncertainty are:
 - Infectivity in relevant tissues. Of all the unknowns, that of overriding importance is whether dental/oral tissues in patients incubating vCJD would be infective, and if so at what level.

There are as yet no results of studies using human gingival and dental pulp tissues, and these studies may extend into 2009 and 2010 respectively. This is examined in section 2.3 of the risk assessment.

- Protein Residues on dental instruments. This is examined in section 2.2 of the risk assessment.
 - Efficacy of Autoclaving. This is examined in section 2.3 of the risk assessment.
 - Current prevalence of vCJD infection. This is examined in section 3.3 of the risk assessment.
 - Epidemiology of vCJD. This is examined in section 4 of the risk assessment.
15. Suggested areas of further work to reduce the uncertainty in these key areas are described in section 5 of the risk assessment together with a preliminary analysis of possible interventions and risk reduction measures.

ADVICE SOUGHT FROM THE COMMITTEE

16. SEAC is asked to consider and comment on:
- the risk assessment and the key uncertainties and assumptions;
 - further work to reduce the uncertainties;
 - the implications of the findings for public health.



POSITION STATEMENT vCJD AND ENDODONTIC DENTISTRY

Issue

1. The Department of Health (DH) asked SEAC to advise on the findings and implications of a preliminary risk assessment of potential vCJD transmission via endodontic procedures (dental procedures involved in the maintenance of dental pulp and the treatment of the pulp cavity)¹. This is particularly pertinent because of the large number of endodontic procedures undertaken in the UK.

Background

2. There are no reported definite or suspected cases of vCJD transmission arising from dental procedures. However, prions are more resistant than other types of infectious agent to the conventional cleaning and sterilisation practices used to decontaminate dental instruments². Therefore, should dental instruments become contaminated from tissues in the oral cavity of infected individuals, there is a risk of transmission to subsequent patients.
3. A quantitative DH risk assessment³, accepted by SEAC in 2003, considered two possible mechanisms for the transfer of vCJD infectivity via dental instruments: (i) accidental abrasion of the lingual tonsil, known to carry infectivity in vCJD cases; and (ii) contact with dental pulp that evidence from animal studies suggested may be infective. On the basis of the information available, the DH analysis suggested that the risk of transmission to individual patients via accidental abrasion of the lingual tonsil is very low. Furthermore, should dental pulp be infective, the risk of

¹ Department of Health. Dentistry and vCJD: the implications of a "carrier state" for a self-sustaining epidemic due to endodontic dentistry. A Preliminary Risk Assessment. *Unpublished*.

² Smith *et al.* (2003) Prions and the oral cavity. *J. Dent. Res.* 82, 769-775.

³ Department of Health. (2003) Risk assessment for vCJD and dentistry.

transmission via endodontic procedures, although higher, is also low. Although a very large number of dental procedures are conducted, the relative risk to public health from potential transmission via dental, compared with hospital, surgery was considered to be relatively low.

4. In 2006, SEAC considered a new preliminary risk assessment by DH of the risks of vCJD transmission via endodontic procedures, taking into account new information on decontamination of dental instruments, the potential infectivity of dental pulp, and the possible existence of subclinical vCJD carrier cases.

Endodontic instruments

5. Evidence suggests that the files and reamers used in endodontic procedures are reused and are difficult to reliably decontaminate⁴. Appreciable quantities of residual material remain adherent to the surface after normal cleaning and sterilisation⁵. Thus, there is potential for transfer of dental pulp between patients undergoing endodontic procedures.

vCJD infectivity in dental tissues

6. There are no data on vCJD infectivity in dental pulp. Although no abnormal prions were found in a study of dental tissues, including dental pulp, from vCJD cases⁶, dental pulp includes blood and peripheral nerve tissue known to carry vCJD infectivity^{7,8}. In addition, appreciable infectivity has been found in the dental pulp of hamsters with hamster scrapie⁹. Although it is possible that the peripheral nerve may only become infective close to, or after, the onset of clinical vCJD, inflammation may promote the propagation of prions¹⁰. Thus, although the data are limited and indirect, it is reasonable to assume that the dental pulp of individuals subclinically-infected with vCJD may be infectious although the

⁴ Letters *et al.* (2005) A study of visual and blood contamination on reprocessed endodontic files from general dental practice. *Br. Dent. J.* 199, 522-525.

⁵ Smith *et al.* (2005) Residual protein levels on reprocessed dental instruments. *J. Hosp. Infect.* 61, 237-241.

⁶ Head *et al.* (2003) Investigation of PrP^{res} in dental tissues in variant CJD. *Br. Dent. J.* 195, 339-343.

⁷ SEAC 91 minutes paragraph 9. www.seac.gov.uk/papers/papers.htm

⁸ Department of Health (2005) Assessing the risk of vCJD transmission via surgery: an interim view. *Unpublished.*

⁹ Ingrosso *et al.* (1999) Transmission of the 263K scrapie strain by the dental route. *J. Gen. Virol.* 80, 3043-3047.

¹⁰ Heikenwalder *et al.* (2005) Chronic lymphocytic inflammation specifies the organ tropism of prions. *Science.* 307, 1107-1110.

level of infectivity is unknown. Studies underway will provide direct data on the infectivity in dental tissues from vCJD cases.

Subclinical carrier state

7. A study of humanised mice showed that vCJD infections may not always progress to clinical disease within the normal lifespan of the animals¹¹. Another study suggested that prion infections in mice that remain at a subclinical level can be transmitted to other mice, resulting in clinical disease¹². Thus, there is evidence to suggest that individuals infected with the BSE / vCJD agent may remain in a subclinical infection carrier state instead of developing vCJD. A discrepancy between prevalence estimates based on a survey of abnormal prion protein in appendix and tonsil tissue and data on vCJD cases supports this hypothesis¹³. As no diagnostic test exists to identify such individuals, they could over the course of their lives be potential sources of numerous secondary infections arising from invasive medical or dental procedures.
8. The prevalence of subclinical infection in the UK population is uncertain. A recent estimate suggests the number of subclinical carriers may be of the order of several thousand¹⁴. SEAC has strongly recommended that further studies to ascertain better the prevalence of vCJD infection be urgently considered¹⁵.

Transmission risks

9. The new DH analysis suggests that, on the basis that residual dental pulp on endodontic files and reamers is transferred relatively efficiently to patients on reuse, dental pulp is as infective as peripheral nerve tissue and a subclinical carrier population for vCJD exists, a self-sustaining vCJD epidemic arising from endodontic surgery is plausible. There are uncertainties about the efficiency of vCJD transmission via endodontic procedures, the vCJD infectivity of dental pulp and the existence of a subclinical infection carrier state. However, even if a self-sustaining epidemic were not possible, clusters of vCJD infections could arise from the

¹¹ Bishop *et al.* (2006) Predicting susceptibility and incubation time of human-to-human transmission of vCJD. *Lancet Neurology*.

¹² Hill *et al.* (2000) Species-barrier-independent prion replication in apparently resistant species. *Proc. Natl. Acad. Sci. USA*. 97, 10248-10253.

¹³ SEAC Epidemiology Subgroup (2005) Position statement on the vCJD epidemic. www.seac.gov.uk/statements/state260106subgroup.htm

¹⁴ Clarke & Ghani. (2005) Projections of future course of the primary vCJD epidemic in the UK: inclusion of subclinical infection and the possibility of wider genetic susceptibility. *R. J. Soc. Interface*.

¹⁵ SEAC (2005) SEAC response to the SEAC Epidemiology Subgroup statement on the vCJD epidemic. www.seac.gov.uk/statements/state260106.htm

use of instruments contaminated with the vCJD agent from endodontic procedures on infected patients. Interactions between this and other routes of secondary transmission, such as blood transfusion and hospital surgery, would make a self-sustaining epidemic more likely.

Potential risk reduction measures

10. Endodontic files and reamers have a limited lifespan, restricting the number of possible secondary transmissions. Improving the effectiveness of procedures used to decontaminate dental instruments would reduce the risk of transmission. Restricting endodontic files and reamers to single use would prevent potential secondary transmission via these instruments.

Conclusions

11. A preliminary risk assessment produced by DH suggests that vCJD transmission via endodontic dentistry may, under certain hypothetical but plausible scenarios, be sufficient to sustain a secondary vCJD epidemic. However, there are uncertainties around the data and assumptions underpinning the assessment. Research underway will address some of these uncertainties and allow the risk assessment to be refined. Once the research is complete and / or other data become available, the risks should be reassessed. A watching brief should be maintained.
12. It is unclear whether or not vCJD infectivity can be transmitted via endodontic files and reamers. However, given the plausibility of such a scenario and the large number of procedures undertaken annually, it would be prudent to consider restricting these instruments to single use as a precautionary measure. Since sufficiently rigorous decontamination of these instruments is difficult, single use of these instruments would eliminate this risk, should it exist.

SEAC
May 2006



POSITION STATEMENT vCJD AND DENTISTRY

Issue

1. The Department of Health (DH) asked SEAC to advise on the findings of preliminary research aimed at informing estimates of the risk of variant Creutzfeldt-Jakob Disease (vCJD) transmission via dentistry.

Background

2. Prions are more resistant than other types of infectious agent to the conventional cleaning and sterilisation practices used to decontaminate dental instruments¹⁶. Appreciable quantities of residual material may remain adherent to the surface after normal cleaning and sterilisation¹⁷. Therefore, if dental tissues are both infectious and susceptible to infection, then dental instruments are a potential mechanism for the secondary transmission of vCJD. Dentistry could be a particularly significant route of transmission for the population as a whole, due to the large number of routine procedures undertaken and also because dental patients have a normal life expectancy. This is in contrast with other transmission routes, such as blood transfusion and neurosurgery, where procedures are often carried out in response to some life-threatening condition. Additionally, the ubiquity of dental procedures and the lack of central records on dental procedures means that should such transmission occur, then it would be difficult to detect and control.
3. No cases of vCJD transmission arising from dental procedures have been reported to date¹⁸. Previous DH risk assessments^{19,20}

¹⁶ Smith *et al.* (2003) Prions and the oral cavity. *J. Dent. Res.* 82, 769-775.

¹⁷ Smith *et al.* (2005) Residual protein levels on reprocessed dental instruments. *J. Hosp. Infect.* 61, 237-241.

¹⁸ Everington *et al.* (2007) Dental treatment and risk of variant CJD – a case control study. *Brit. Den. J.* 202, 1-3.

¹⁹ Department of Health. (2003) Risk assessment for vCJD and dentistry.

have focused on two possible mechanisms for the transfer of vCJD infectivity via dental instruments; accidental abrasion of the lingual tonsil and endodontic procedures that involve contact with dental pulp. In considering these assessments, SEAC agreed that the risk of transmission via accidental abrasion of the lingual tonsil appears very low. However, the risk of transmission via endodontic procedures may be higher and give rise to a self-sustaining vCJD epidemic under circumstances where (i) dental pulp is infective, (ii) transmission via endodontic instruments is efficient and (iii) a large proportion of vCJD infections remain in a subclinical carrier state (SEAC 91, February 2006). In light of this, SEAC advised that restricting endodontic files and reamers to single use be considered²¹. SEAC recommended reassessment of these issues as new data emerge.

New research

4. Preliminary, unpublished results of research from the Health Protection Agency, aimed at addressing some of the uncertainties in the risk assessments, were reviewed by SEAC (SEAC 97, May 2007). The prion agent used in these studies is closely related to the vCJD agent. This research, using a mouse model, shows that following inoculation of mouse-adapted bovine spongiform encephalopathy (BSE) directly into the gut, infectivity subsequently becomes widespread in tissues of the oral cavity, including dental pulp, salivary glands and gingiva, during the preclinical as well as clinical stage of disease.
5. It is not known how closely the level and distribution of infectivity in the oral cavity of infected mice reflects those of humans infected with vCJD, as there are no comparable data from oral tissues, in particular dental pulp and gingiva, from human subclinical or clinical vCJD cases. Although no abnormal prion protein was found in a study of human dental tissues, including dental pulp, salivary glands and gingiva from vCJD cases²², the relationship between levels of infectivity and abnormal prion protein is unclear²³. Infectivity studies underway using the mouse model and oral tissues that are presently available from human vCJD cases will provide some comparable data. On the basis of what is currently known, there is no reason to suppose that the mouse is

²⁰ Department of Health (2006) Dentistry and vCJD: the implications of a carrier-state for a self-sustaining epidemic. *Unpublished*.

²¹ SEAC (2006) Position statement on vCJD and endodontic dentistry.

<http://www.seac.gov.uk/statements/statement0506.htm>

²² Head *et al.* (2003) Investigation of PrP^{res} in dental tissues in variant CJD. *Br. Dent. J.* 195, 339-343.

²³ SEAC 90 reserved business minutes.

not a good model for humans in respect to the distribution of infectivity in oral tissues. Furthermore, the new data are consistent with published results from experiments using a hamster scrapie model²⁴.

6. A second set of experiments using the same mouse model showed that non-invasive and transient contact between gingival tissue and fine dental files contaminated with mouse-adapted BSE brain homogenate transmits infection very efficiently. It is not known how efficient gingival transmission would be if dental files were contaminated with infectious oral tissues and then subsequently cleaned and sterilised, a situation which would more closely model human dental practice. Further studies using the mouse model that would be more representative of the human situation, comparing oral tissues with a range of doses of infectivity, cleaned and sterilised files and the kind of tissue contact with instruments that occurs during dentistry, should be considered.
7. SEAC considered that the experiments appear well designed and the conclusions justified and reliable, while recognising that the research is incomplete and confirmatory experiments have yet to be completed. It is recommended that the research be completed, submitted for peer-review and widely disseminated as soon as possible so others can consider the implications. Nevertheless, these preliminary data increase the possibility that some oral tissues of humans infected with vCJD may potentially become infective during the preclinical stage of the disease. In addition, they increase the possibility that infection could potentially be transmitted not only via accidental abrasion of the lingual tonsil or endodontic procedures but a variety of routine dental procedures.

Implications for transmission risks

8. The new findings help refine assumptions made about the level of infectivity of dental pulp and the stage of incubation period when it becomes infective in the risk assessment of vCJD transmission from the reuse of endodontic files and reamers²⁵. For example, if one patient in 10 000 were to be carrying infection (equivalent to about 6 000 people across the UK – the best current estimate²⁶), the data suggest that in the worst case scenario envisaged in the

²⁴ Ingrosso *et al.* (1999) Transmission of the 263K scrapie strain by the dental route. *J. Gen. Virol.* 80, 3043-3047.

²⁵ Department of Health (2006) Dentistry and vCJD: the implications of a carrier-state for a self-sustaining epidemic. *Unpublished.*

²⁶ Clarke & Ghani (2005) Projections of future course of the primary vCJD epidemic in the UK: inclusion of subclinical infection and the possibility of wider genetic susceptibility *R. J. Soc. Interface.* 2, 19-31.

risk assessment, re-use of endodontic files and reamers might lead to up to 150 new infections per annum. It is not known how many of those infected would go on to develop clinical vCJD. In addition, transmission via the re-use of endodontic files and reamers could be sufficiently efficient to cause a self-sustaining vCJD epidemic arising via this route.

9. These results increase the importance of obtaining reliable estimates of vCJD infection prevalence. Data that will soon be available from the National Anonymous Tonsil Archive may help refine this assessment and provide evidence of the existence and extent of subclinical vCJD infection in tonsillectomy patients. Further data, such as from post mortem tissue or blood donations, will be required to assess prevalence in the general UK population²⁷.
10. Recent guidance issued by DH to dentists to ensure that endodontic files and reamers are treated as single use²⁸ is welcomed and should, as long as it is effectively and quickly implemented, prevent transmission and a self-sustaining epidemic arising via this route. However, the extent and monitoring of compliance with this guidance in private and National Health Service dental practice is unclear.
11. The new research also suggests that dental procedures involving contact with other oral tissues, including gingiva, may also be capable of transmitting vCJD. In the absence of a detailed risk assessment examining the potential for transmission via all dental procedures, it is not possible to come to firm conclusions about the implications of these findings for transmission of vCJD. However, given the potential for transmission by this route serious consideration should be given to assessing the options for reducing transmission risks such as improving decontamination procedures and practice or the implementation of single use instruments.
12. The size of the potential risk from interactions between the dental and other routes of secondary transmission, such as blood transfusion and hospital surgery, to increase the likelihood of a self-sustaining epidemic is unclear.

²⁷ SEAC Epidemiology Subgroup (2006) position statement of the vCJD epidemic. <http://www.seac.gov.uk/statements/state260106subgroup.htm>

²⁸ DH (2007) Precautionary advice given to dentists on re-use of instruments <http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=279256&NewsAreaID=2&NavigatedFromDepartment=False>

13. It is likely to be difficult to distinguish clinical vCJD cases arising from dietary exposure to BSE from secondary transmissions via dental procedures, should they arise, as a large proportion of the population is likely both to have consumed contaminated meat and undergone dentistry. However, an analysis of dental procedures by patient age may provide an indication of the age group in which infections, if they occur, would be most likely to be observed. Should the incidence of clinical vCJD cases in this age group increase significantly, this may provide an indication that secondary transmission via dentistry is occurring. Investigation of the dental work for these cases may provide supporting data. There is no clear evidence, to date, based on surveillance or investigations of clinical vCJD cases, that any vCJD cases have been caused by dental procedures but this possibility cannot be excluded.

Conclusions

14. Preliminary research findings suggest that the potential risk of transmission of vCJD via dental procedures may be greater than previously anticipated. Although this research is incomplete, uses an animal model exposed to relatively high doses of infectivity, and there are no data from infectivity studies on human oral tissues, these findings suggest an increased possibility that vCJD may be relatively efficiently transmitted via a range of dental procedures. Ongoing infectivity studies using human oral tissues and the other studies suggested here will enable more precise assessment of the risks of vCJD transmission through dental procedures.
15. Guidance was issued to dentists earlier this year recommending that endodontic files and reamers be treated as single use which, provided it is adhered to, will remove any risk of a self-sustaining epidemic arising from re-use of these instruments. To minimise risk it is critical that appropriate management and audit is in place, both for NHS and private dentistry.
16. It is also critical that a detailed and comprehensive assessment of the risks of all dental procedures be conducted as a matter of urgency. While taking into account the continuing scientific uncertainties, this will allow a more thorough consideration of the possible public health implications of vCJD transmission via dentistry and the identification of possible additional precautionary risk reduction measures. The assessment will require continued updating as more evidence becomes available on the transmissibility of vCJD by dental routes, and on the prevalence of infection within the population. A DH proposal to convene an

expert group that includes dental professionals to expedite such an assessment is welcomed. Given the potential for transmission via dentistry, consideration should be given to the urgent assessment of new decontamination technologies which, if proved robust and effective, could significantly reduce transmission risks.

SEAC
June 2007

**POTENTIAL vCJD TRANSMISSION RISKS VIA DENTISTRY:
AN INTERIM REVIEW**

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