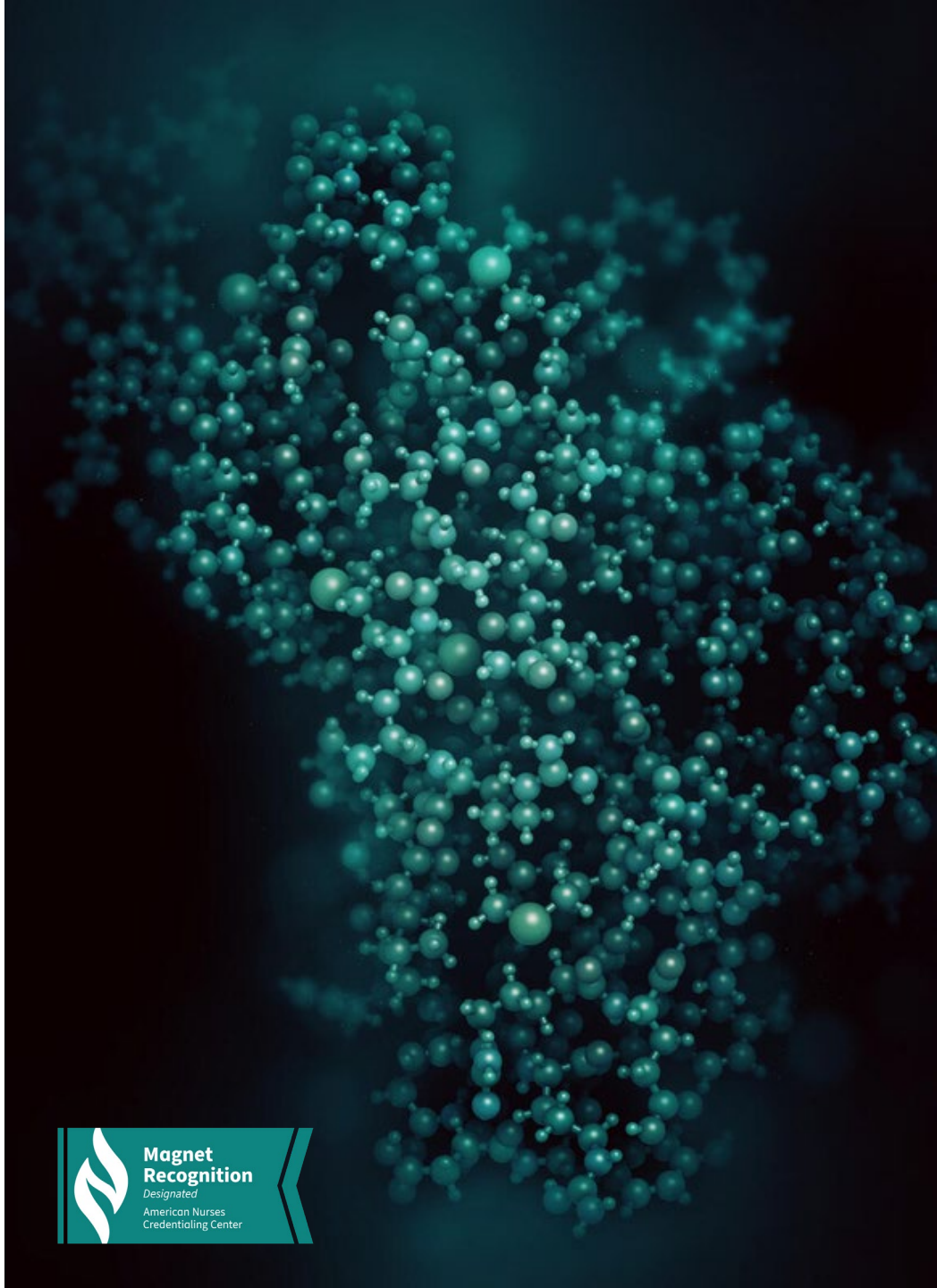
MAYO CLINIC | Department of Nursing

INFECTION CONTROL FOR CJD / PRION DISEASES

TRANSLATING RESEARCH INTO PRACTICE APPLICATIONS

Michelle Meyer, Ph.D., CIC

APIC Minnesota Conference | September 24, 2026 | Plymouth, MN



FINANCIAL DISCLOSURES

DISCLOSURE

Nothing to disclose

No financial relationships or conflicts of interest to report.



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LEARNING OBJECTIVES

By the end of this session, participants will be able to:

01

Describe

Clinical presentation and diagnostic testing associated for Creutzfeldt-Jakob Disease (CJD).

02

Assess

Transmission risk based on patient status, activity performed (i.e., procedure), instrumentation and tissue infectivity.

03

Apply

Evidence-based strategies for patient care, occupational safety, cleaning / disinfection, instrument reprocessing and exposure investigations.

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01

CLINICAL PRESENTATION AND DIAGNOSTICS

A practical infection prevention framework

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CJD CLINICAL COURSE

A simplified timeline for most sporadic CJD cases



Prodromal

- Nonspecific: insomnia, fatigue, headache
- Vision: blurry vision, visual field deficit, leading to cortical vision loss
- Personality: depression, anxiety, mood swings

Neurodegeneration

- Rapid dementia: memory loss, confusion, disorientation
- Ataxia: vertigo and stumbling, off-balance
- Myoclonus: twitches / spasms, startle response
- Alien limb phenomenon

Advanced decline

- Severe aphasia
- Dysphasia
- Loss of motor control
- Coma

Clinical Overview of Creutzfeldt-Jakob Disease (CJD) | Classic CJD | CDC
Clinical Symptoms of CJD | Pathology | School of Medicine | Case Western Reserve University

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HOW CJD IS DIAGNOSED

Clinical presentation **and** a combination of supportive diagnostic tests **or** neuropathology / autopsy

- No single routine test establishes the diagnosis by itself
  - Neuropathology of brain tissue require for confirmed cases: send out test to National Prion Disease Pathology Surveillance Center (NPDPSC)
- Treatable and other degenerative causes must be ruled out
  - Need for rapid diagnosis / differentiation
- Familial CJD: first-degree relative, PRNP genetic blood testing

IMAGING

MRI

MRI with and without contrast, diffusion-weighted

PHYSIOLOGY

EEG

Sharp wave complexes appear as disease progresses

FLUID BIOMARKERS

CSF

RT-QuIC is interpreted alongside protein biomarkers

NEUROPATHOLOGY

TISSUE

Brain biopsy with staining / Western blot on formalin fixed or frozen tissue

Clinical Overview of Creutzfeldt-Jakob Disease (CJD) | Classic CJD | CDC
Clinical Symptoms of CJD | Pathology | School of Medicine | Case Western Reserve University
Clinical Testing for Prion Disease | Pathology | School of Medicine | Case Western Reserve University

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CSF BIOMARKERS

MOST SENSITIVE AND SPECIFIC

Positive RT-QuIC

Considered gold standard biomarker. Considered ‘probable case’ per CDC with clinical symptoms.

SUPPORTIVE

Very high total tau (T-tau)

T-tau markedly elevated (> 393 pg/mL) vs Alzheimer’s.

RATIO

T-tau : P-tau

A higher ratio (> 18) supports CJD vs Alzheimer’s.

CAUTION

14-3-3 and T-tau

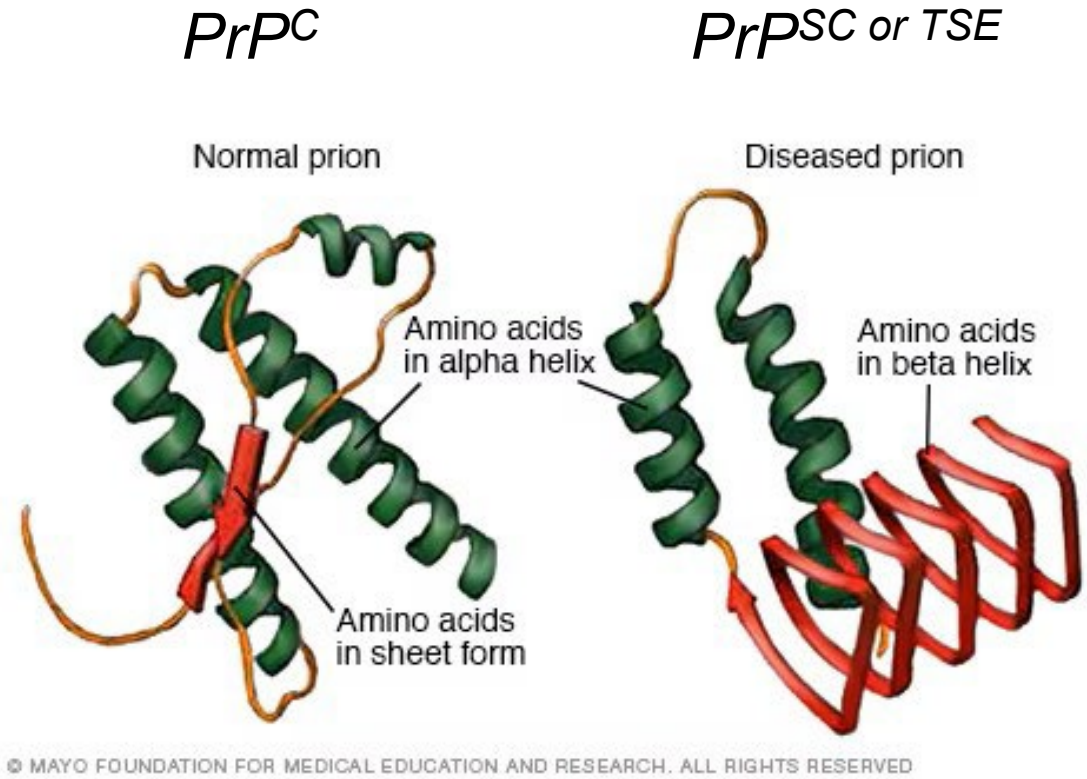
Nonspecific markers cannot be used alone.

Clinical Overview of Creutzfeldt-Jakob Disease (CJD) | Classic CJD | CDC
Clinical Symptoms of CJD | Pathology | School of Medicine | Case Western Reserve University
Clinical Testing for Prion Disease | Pathology | School of Medicine | Case Western Reserve University
Conference Recordings - CJD Foundation

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RT-QuIC (REAL-TIME QUAKING-INDUCED CONVERSION)

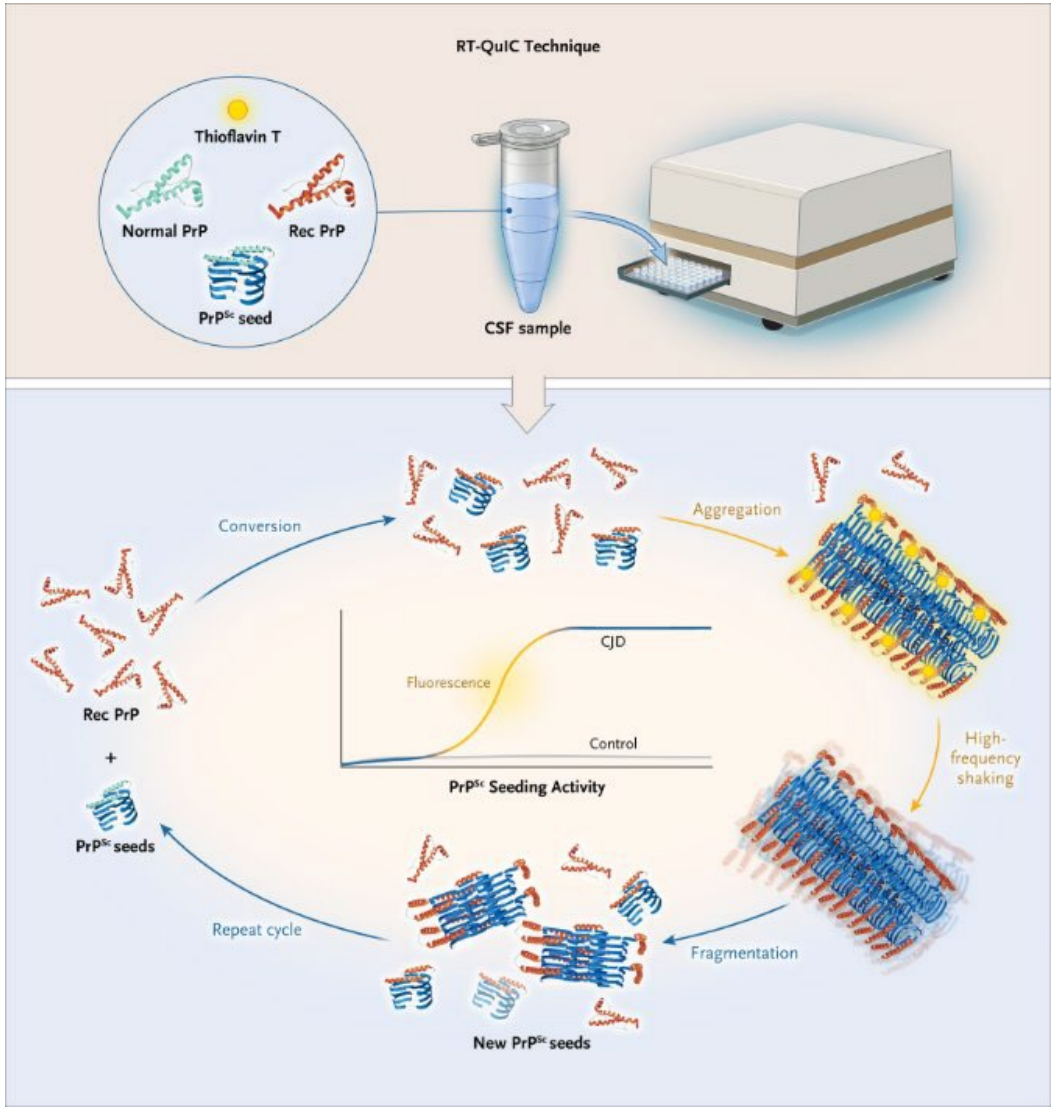
- Detects misfolded proteins
- Considered gold standard CJD biomarker
  - 90-96% sensitivity
  - 99-100% specificity
  - ↑ as disease progresses
- Some familial cases may test persistently negative, but extremely rare
- Testing very early in disease course can be negative initially



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Real-time quaking-induced conversion: A highly sensitive assay for prion detection - PMC

RT-QuIC



ROCHESTER, MINNESOTA

Mayo Clinic Neuroimmunology Laboratory

In-house testing added in 2024

CLEVELAND, OHIO

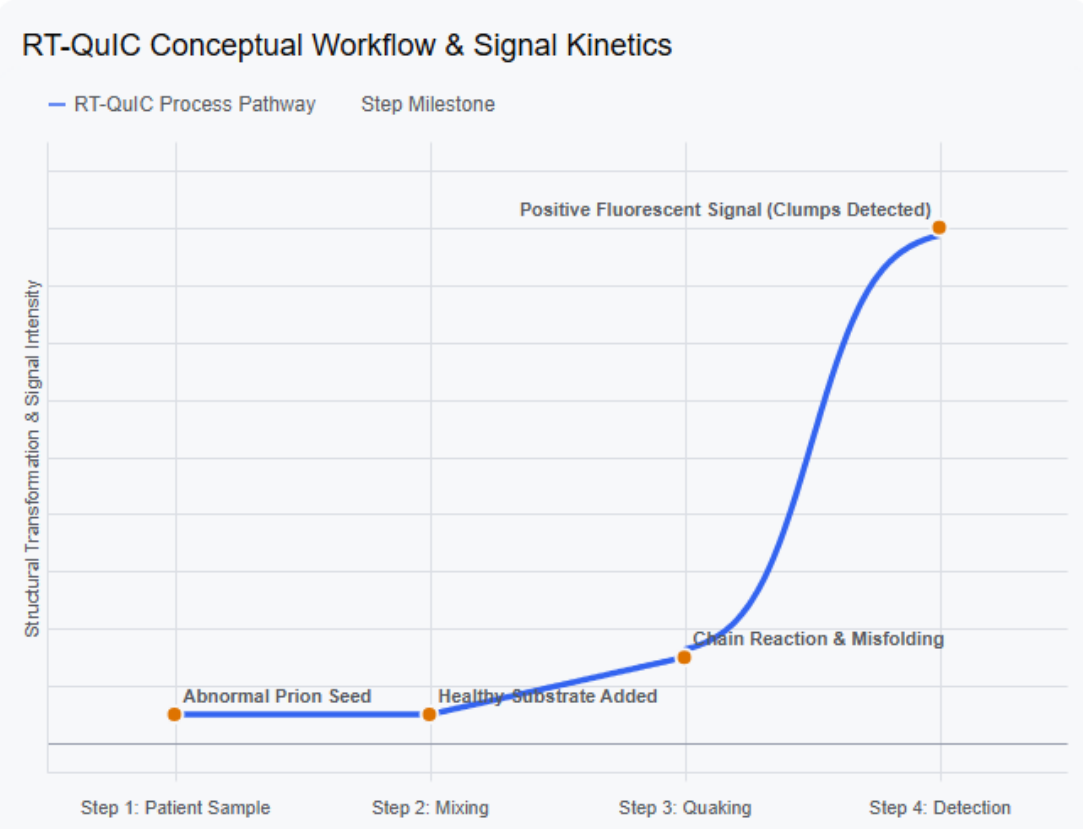
National Prion Disease Pathology Surveillance Center

Case Western Reserve University

Zerr, Inga. Laboratory Diagnosis of Creutzfeldt-Jakob Disease. N Engl J Med 2022;386:1345-1350

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RT-QuIC KINETICS



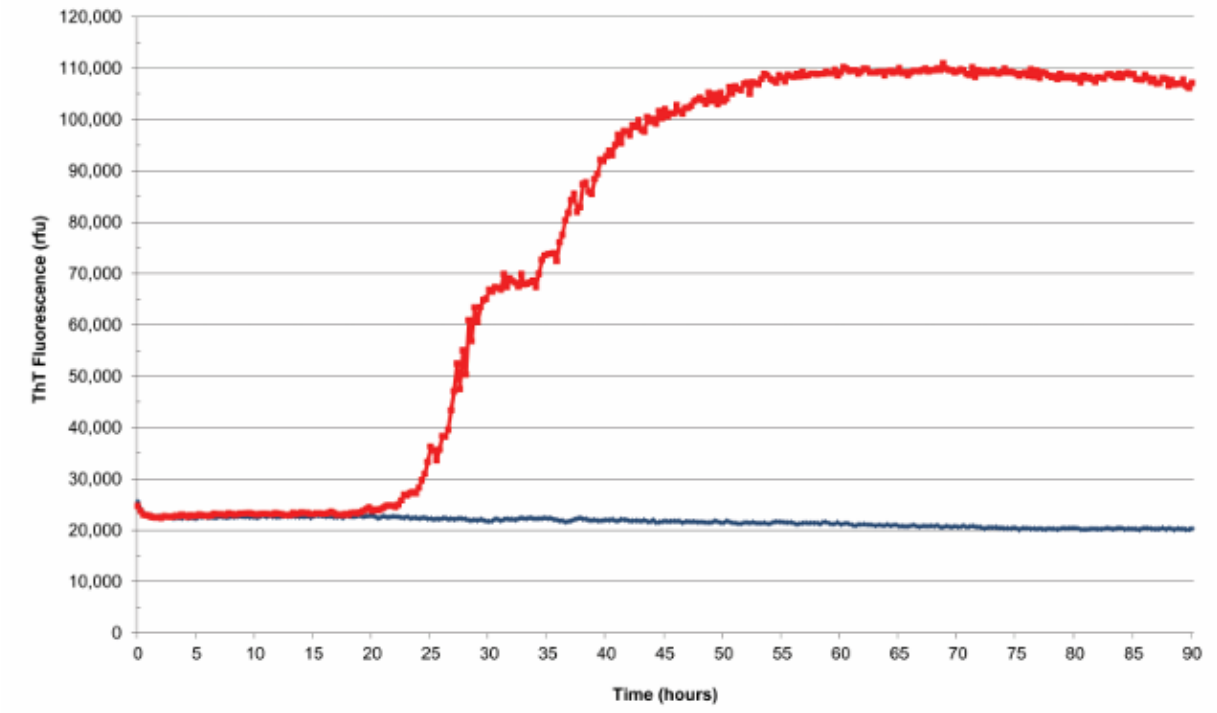


Figure 2 Real-time quaking-induced conversion reactions seeded with cerebrospinal fluid from a patient with sporadic Creutzfeldt-Jakob disease (sCJD) (red) and a patient without sCJD or related prion disorder (blue). ThT, thioflavin T.

Green AJE. RT-QuIC: a new test for sporadic CJD. Pract Neurol. 2019 Feb;19(1):49-55.
Conceptual graphic created by Google (2026) Gemini [Large language model]

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INFECTION STATUS AND ISOLATION IN ELECTRONIC HEALTH RECORDS

- Automatically added when tests ordered:
  - NPDPSC pathology send out
  - RT-QuIC associated order panels
- Automatically removed if RT-QuIC negative
- Can also be manually added or removed
  - Consult neurology
  - Familial cases with negative RT-QuIC
- Isolation triggered by Infection Status



	Elevated t-Tau/p-Tau ratio (>18)	Normal t-Tau/p-Tau ratio (< or =18)
RT-QuIC positive	Prion disease highly likely	Prion disease likely
RT-QuIC negative or inconclusive	Prion disease possible	Prion disease unlikely

Mayo Clinic Lab Test Catalog. Accessed September 2026.

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ADAPT THE WORKFLOW TO YOUR FACILITY

A Mayo Clinic workflow may not transfer directly

HIGHER VOLUME / IN-HOUSE TESTING

Established pathway

Automated infection and isolation status, established policies, experienced teams, and shorter testing turnaround reduces the need for proactive case management.

LONGER TURNAROUND / FEWER CASES

Build more support

Consider proactive case management, staff education, custom alerts and approval processes.

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02

TISSUE INFECTIVITY AND TRANSMISSION RISK

A practical infection prevention framework

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TISSUE INFECTIVITY

AND

TRANSMISSION RISK

"It is…important to understand that categories of infectivity are not the same as categories of risk, which require consideration not only of the level of infectivity in tissue, but also of the amount of tissue to which a person or animal is exposed, and the route by which infection is transmitted."

World Health Organization (WHO)

Tissue level + exposure amount + route = risk assessment

2006 WHO Guidelines on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies
2010 WHO Tables on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies

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WHO 2010 TISSUE INFECTIVITY

IA: **High-infectivity tissues:** Central Nervous System (CNS) tissues that attain a high titre of infectivity in the later stages of all TSEs, and certain tissues that are anatomically associated with the CNS.

IB: **Lower-infectivity tissues:** peripheral tissues that have tested positive for infectivity and/or PrP^{TSE} in at least one form of TSE.

IC: **Tissues with no detectable infectivity:** tissues that have been examined for infectivity and/or PrP^{TSE} with negative results.

Data entries are shown as follows:

+ Presence of infectivity or PrP^{TSE}
- Absence of detectable infectivity or PrP^{TSE}

NT Not tested

NA Not applicable

? Controversial results

( ) Limited or preliminary data

2006 WHO Guidelines on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies

2010 WHO Tables on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies

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WHO 2010 TISSUE INFECTIVITY

Table IA: High-infectivity tissues

Tissues	Humans				Cattle	Sheep & goats	Elk & deer	
	vCJD		Other TSEs		BSE	Scrapie	CWD	
	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]			PrP^{TSE}
Brain	+	+	+	+	+			+
Spinal cord	+	+	+	+	+			+
Retina	NT	+	+	+	+			+
Optic nerve[2]	NT	+	NT	+	+			+
Spinal ganglia	+	+	NT	+	+			+
Trigeminal ganglia	+	+	NT	+	+			-
Pituitary gland[3]	NT	+	+	+	-			+
Dura mater[3]	NT	(+)	+	-	NT			NT

PRIMARY LENS

Human tissue data

Prioritize tissue infectivity observed in humans and documented transmission events.

Interpret data on vCJD carefully.

Annex 1 Footnotes

1. Infectivity bioassays of human tissues have been conducted in either primates or mice (or both);

2010 WHO Tables on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies

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WHO 2010 TISSUE INFECTIVITY

Use animal data with purpose

SUPPORT

Biologic plausibility

Animal findings can help explain whether transmission is scientifically possible.

SIGNAL

Early warning

Historically, major prion discoveries in animals have sometimes preceded human risk recognition.

RESTRAINT

Avoid overreach

Limited animal findings alone may not justify the most conservative clinical precautions.

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A NOTE ON VARIANT CJD (VCJD)

- vCJD has broader lymphoid and peripheral tissue involvement than classic CJD
  - Tonsils, appendix, spleen, lymph nodes
- Blood transfusion transmission has only been associated with vCJD
- vCJD is extremely rare
  - Only 4 cases in the U.S.
    - All acquired overseas
    - Last case in 2014
  - Last UK patient in 2026
  - Cases since then were lab acquired



BOTTOM LINE

Do not overgeneralize

Carefully assess vCJD findings before directly applying to sporadic CJD policy / procedures.

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WHO 2010 CLASSIFICATION CHANGES

Why the lower-infectivity category became broader

Highly Conservative Approach: If a tissue was positive in **any TSE**, the expert group generally considered it potentially infectious and therefore included it in the lower-infectivity category.

Table IB: Lower-infectivity tissues

Tissues	Humans				Cattle		Sheep & goats		Elk & deer	
	vCJD		Other TSEs		BSE		Scrapie		CWD	
	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}
Peripheral Nervous system										
Peripheral nerves	+	+	(-)	+	[+]	+	+	+	NT	+
Autonomic ganglia[4]	NT	+	NT	(-)	NT	+	NT	+	NT	+
Lymphoreticular tissues										
Spleen	+	+	+	+	-	-	+	+	NT	+
Lymph nodes	+	+	+	-	-	-	+	+	NT	+
Tonsil	+	+	NT	-	+	-	+	+	NT	+
Nictitating membrane	NA	NA	NA	NA	+	-	[+]	+	NT	+
Thymus	NT	+	NT	-	-	NT	+	+	NT	-
Alimentary tract[5]										
Esophagus	NT	-	NT	-	-	NT	[+]	+	NT	+
Fore-stomach[6] (ruminants only)	NA	NA	NA	NA	-	NT	[+]	+	NT	+
Stomach/ abomasum	NT	-	NT	-	-	NT	[+]	+	NT	+
Duodenum	NT	-	NT	-	-	-	[+]	+	NT	+
Jejunum[7]	NT	+	NT	-	-	+	[+]	+	NT	NT
Ileum[7]	NT	+	NT	-	+	+	+	+	NT	+
Appendix	(-)	+	NT	-	NA	NA	NA	NA	NA	NA
Colon/caecum[7]	NT	+	NT	-	-	-	+	+	NT	+
Rectum	[+]	+	NT	NT	NT	NT	NT	+	NT	+
Reproductive tissues										
Placenta[8]	NT	-	(+)	-	-	NT	+	+	NT	-
Ovary[3]	NT	- (+)	NT	-	-	NT	-	-	NT	-
Uterus[3]	NT	- (+)	NT	-	-	NT	-	-	NT	-

Table IB: Lower-infectivity tissues

Tissues	Humans				Cattle		Sheep & goats		Elk & deer	
	vCJD		Other TSEs		BSE		Scrapie		CWD	
	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}
Other tissues										
Mammary gland/udder[9]	NT	-	NT	-	-	NT	-	+	NT	NT
Skin[3,10]	NT	- (+)	NT	-	-	NT	-	+	[+]	[+]
Adipose tissue	NT	-	(-)	-	-	NT	NT	NT	[+]	NT
Heart/pericardium	NT	-	-	-	-	NT	-	NT	NT	+
Lung	NT	-	+	-	-	NT	-	-	NT	+
Liver[3]	NT	- (+)	+	-	-	NT	+	-	NT	-
Kidney[3,11]	NT	- (+)	+	-	-	-	[+]	+	NT	+
Adrenal	NT	+	-	-	[+]	+	+	-	NT	+
Pancreas[3]	NT	- (+)	NT	-	-	NT	+	NT	NT	+
Bone marrow[12]	-	-	(-)	-	(+)	NT	+	NT	NT	-
Skeletal muscle[13]	NT	+	(-)	+	[+]	NT	[+]	+	[+]	-
Tongue[14]	NT	-	NT	-	-	NT	[+]	+	NT	-
Blood vessels	NT	+	NT	+	-	NT	NT	+	NT	-
Nasal mucosa[15]	NT	NT	NT	+	-	NT	+	+	NT	+
Salivary gland	NT	-	NT	-	-	NT	+	NT	-	-
Cornea[16]	NT	-	+	-	NT	NT	NT	NT	NT	NT
Body fluids, secretions and excretions										
CSF	-	-	+	-	-	NT	+	-	NT	NT
Blood[17]	+	?	-	?	-	?	+	?	+	?
Saliva	NT	-	-	NT	NT	NT	-	NT	+	[-]
Milk[18]	NT	NT	(-)	NT	-	-	+	[+]	NT	NT
Urine[19]	NT	-	-	-	-	NT	-	-	- [+]	[+]
Feces[19]	NT	NT	-	NT	-	NT	-	NT	- [+]	NT

2010 additions/reclassification from no to low-infectivity driven by:

- Very limited animal data: urine, saliva, feces, milk, adipose tissue (fat), mammary glands, heart/pericardium
- vCJD case w/ multiorgan involvement: uterus, ovary, skin, pancreas

2010 WHO Tables on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies

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Table IC: Tissues with no detected infectivity or PrP^{TSE}

Tissues	Humans				Cattle		Sheep & goats		Elk & deer	
	vCJD		Other TSEs		BSE		Scrapie		CWD	
	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}	Infectivity[1]	PrP^{TSE}
Reproductive tissues										
Testis	NT	-	(-)	-	-	NT	-	-	NT	-
Prostate/Epididymis/ Seminal vesicle	NT	-	(-)	-	-	NT	-	-	NT	-
Semen	NT	-	(-)	-	-	NT	-	-	NT	NT
Placenta fluids	NT	NT	(-)	(-)	-	NT	NT	NT	NT	NT
Fetus[20]	NT	NT	NT	NT	-	NT	-	-	NT	(-)
Embryos[20]	NT	NT	NT	NT	-	NT	?	NT	NT	NT
Musculo-skeletal tissues										
Bone	NT	-	NT	-	-	NT	NT	NT	NT	NT
Tendon	NT	-	NT	-	-	NT	NT	NT	NT	NT
Other tissues										
Gingival tissue	NT	-	-	-	NT	NT	NT	NT	NT	NT
Dental pulp	NT	-	NT	-	NT	NT	NT	NT	NT	NT
Trachea	NT	-	NT	-	-	NT	NT	NT	NT	-
Thyroid gland	NT	-	(-)	-	NT	NT	-	NT	NT	-
Body fluids, secretions and excretions										
Colostrum[21]	NT	NT	(-)	NT	(-)	-	(?)	NT	NT	NT
Cord blood[21]	NT	NT	(-)	NT	-	NT	NT	NT	NT	NT
Sweat	NT	NT	-	NT	NT	NT	NT	NT	NT	NT
Tears	NT	NT	-	NT	NT	NT	NT	NT	NT	NT
Nasal mucus	NT	-	-	NT	NT	NT	NT	NT	NT	NT
Bile	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

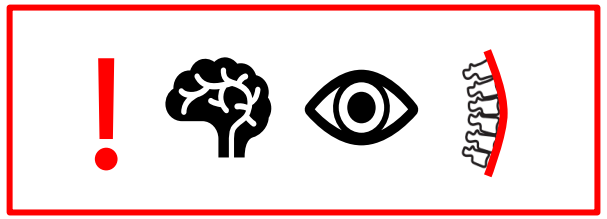
2010 WHO Tables on Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies

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POLICY TRANSLATION

Tissue Risk Level:

Risk Level:	Tissue from suspected or confirmed patient with CJD/prion disease:
High	Brain (including dura mater), spinal cord and posterior eye tissue (including cornea, retina, and optic nerve).
Low	Cerebrospinal fluid (CSF), liver, lymph node, kidney, lung, spleen and placenta.
No	All other tissue. This includes whole blood, peripheral nerves, intestine, bone marrow, leukocytes, serum, thyroid gland, adrenal gland, heart, skeletal muscle, adipose tissue, gingiva, prostate, testes, tears, nasal mucus, saliva, sputum, urine, feces, semen, vaginal secretions and breast milk.



Note: Cornea is a low infectivity tissue per WHO. However, due to ~3 probable / possible cases associated with corneal transplants, could choose to be more conservative. WHO notes that other anterior lens tissues have tested negative and no epidemiologic evidence for iatrogenic transmission.

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HISTORICAL IATROGENIC TRANSMISSION CASES

Healthcare-acquired cases represent less than 1%



Human hormones

Human growth hormone: ~236
Gonadotrophins: ~4

Grafts + Cornea

Dura mater grafts: ~228
Corneal transplants: ~2-3

Instruments

Surgical instrument cases: 6

Stereotactic EEG needles: 2
Neurosurgery instruments: 4

Blood

Blood transfusion associated with vCJD: ~4-5

Modern donor screening, biologics production and instrument controls have made healthcare transmission extremely rare.

Classic Creutzfeldt-Jakob Disease | Classic CJD | CDC Chapter 23 - Prion Diseases Chapter 25. Prion diseases
Chapter 25. Prion diseases Rosenberg's Molecular and Genetic Basis of Neurological and Psychiatric Disease (6th Ed) 2020

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LABORATORY-ACQUIRED CJD

Distinguish clinical laboratories from research laboratories

No U.S. reported cases involving routine clinical laboratory processing, pathology or autopsy.

Prion Disease Research Laboratories:

- Europe:
  - (2010-2019) 33 y.o. Émilie Jaumain vCJD sharps exposure via forceps used to manipulate brain tissue in infected mice
  - (unknown-2021) sharps exposure in same lab
  - (unknown-2019) sharps exposure to BSE-infected brain tissue
- Cut resistant gloves and blunt tools now used



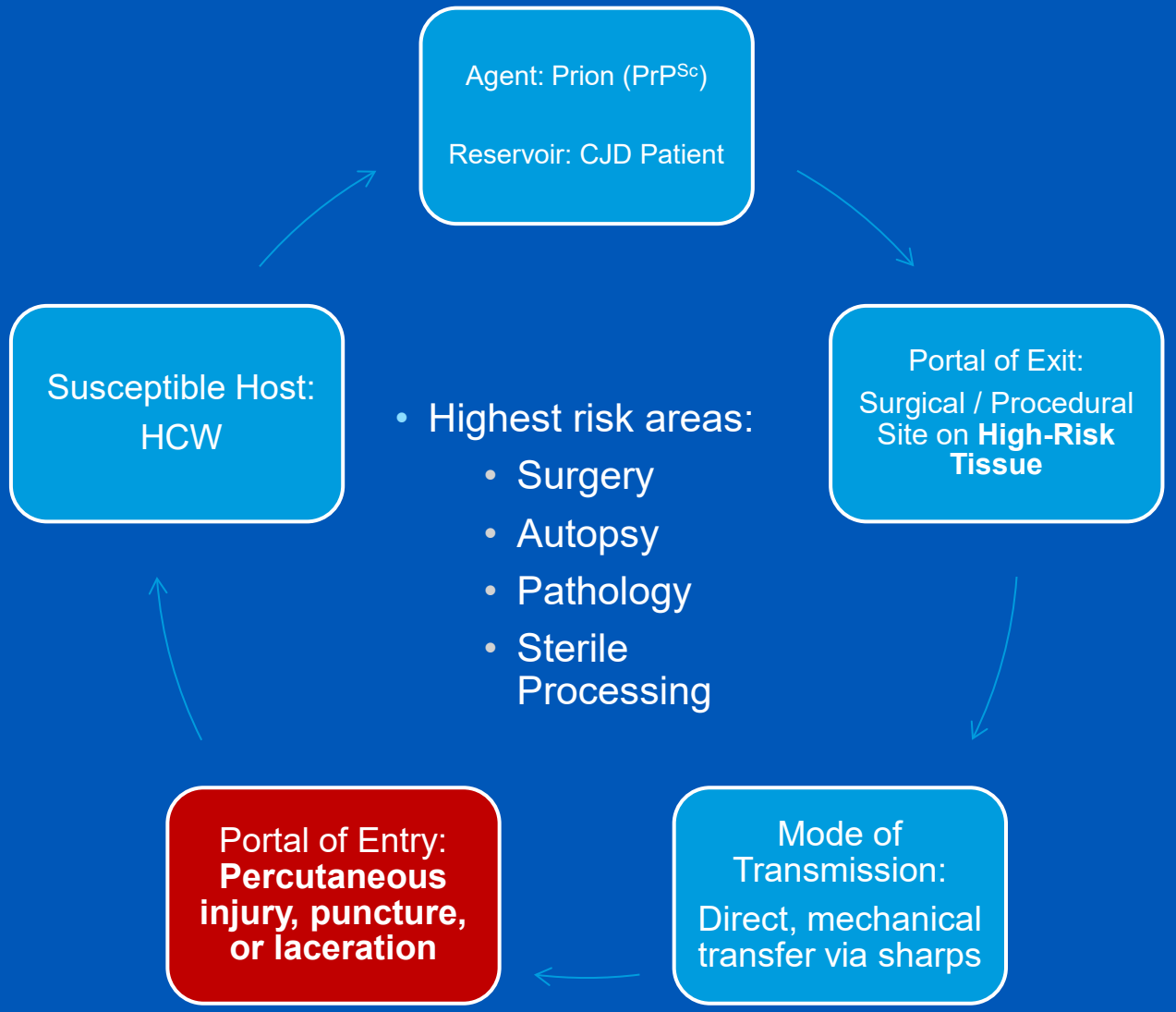
France issues moratorium on prion research after fatal brain disease strikes two lab workers | Science | AAAS

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TRANSMISSION RISK – HEALTHCARE WORKER

*Evidence indicates transmission of CJD is possible only through **percutaneous** exposure to high-risk tissue from an infected person.*

No case of CJD is known to have occurred in a healthcare worker through occupational accident or injury.



Infection Control for CJD | Classic CJD | CDC
WHO Infection Control Guidelines for Transmissible Spongiform Encephalopathies

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ENVIRONMENTAL RISK

CJD is transmissible, but not highly contagious

ADHERENCE

Binds surfaces

Prions adhere well to many materials and are difficult to remove.

RESISTANCE

Routine methods may fail

Prion molecular structure is highly resistant to heat / sterilization and chemicals.

High concentrations of bleach (NaOCl) or sodium hydroxide (NaOH) required.

No EPA or FDA-approved products for disinfection.

EVIDENCE

Not highly contagious

There is no evidence of transmission from routine environmental surfaces.

However, research on decontamination methods is limited to tissue inactivation studies

OPERATIONAL LANGUAGE

Deactivate, not kill

Proteins must be “deactivated,” not “killed.”

Decontamination vs. disinfection.

Per CDC: No evidence that CJD has been transmitted from exposure to environmental surfaces (such as floors, walls, or countertops).

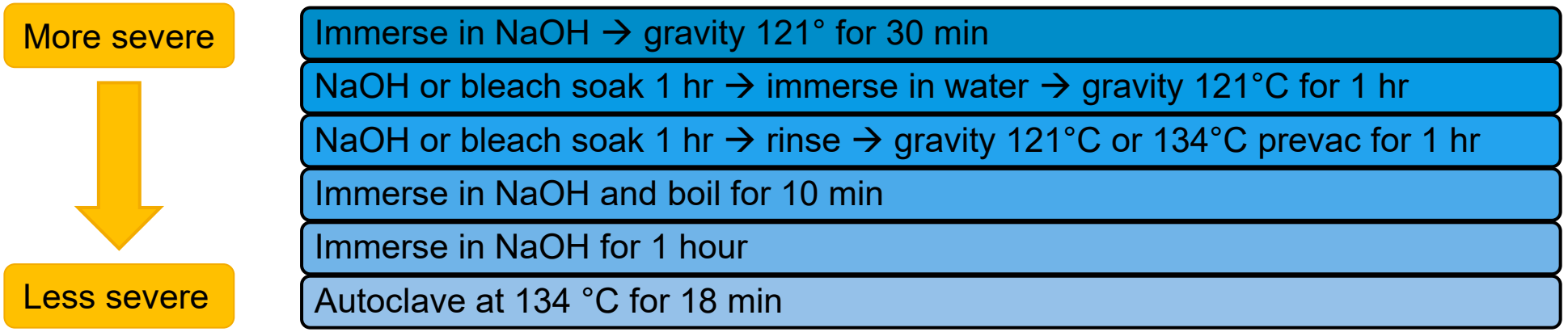
Infection Control for CJD | Classic CJD | CDC
E. CJD | Environmental Services | Infection Control | CDC

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REUSABLE INSTRUMENT REPROCESSING

Heat-resistant, reusable instruments / devices exposed to high or low risk tissues:

WHO / CDC recommended deactivation using 1N sodium hydroxide (NaOH) or 20,000 ppm sodium hypochlorite (bleach) *prior to routine processing*



Limited efficacy research not fully adopted by WHO or CDC:

- Hydrogen peroxide vapor / gas plasma sterilizers
- Cumulative effect of full reprocessing cycle: cleaning, disinfection and sterilization

WHO Infection Control Guidelines for Transmissible Spongiform Encephalopathies

McDonnell G, et al. Cleaning, disinfection and sterilization of surface prion contamination. J Hosp Infect. 2013 Dec;85(4):268-73.

Rogez-Kreuz C, et al. Inactivation of animal and human prions by hydrogen peroxide gas plasma sterilization. Infect Control Hosp Epidemiol. 2009 Aug;30(8):769-77.

Fichet G, et al. Prion inactivation using a new gaseous hydrogen peroxide sterilisation process. J Hosp Infect. 2007 Nov;67(3):278-86.

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INSTRUMENT CONSIDERATIONS: TRADE-OFFS

The technical method is only part of the decision

CHEMISTRY

Harsh agents

WHO / CDC methods rely on strong bleach or sodium hydroxide which are highly corrosive and introduce chemical hazards.

Access to sodium hydroxide is usually limited to laboratories.

COMPATIBILITY

IFUs may conflict

Reprocessing may damage instruments and typically falls outside manufacturer instructions for use (IFUs).

WHO has done some research to assess material compatibility and functionality: sodium hydroxide less damaging than bleach.

OPERATIONS

Feasibility matters

Chemical hazards, waste disposal, and transmission risks vs. replacement costs shape the decision.

Caution: Loaner instrument vendor contracts may have exclusionary provisions.

Brown SA, et al. Effects on instruments of the World Health Organization--recommended protocols for decontamination after possible exposure to transmissible spongiform encephalopathy-contaminated tissue. J Biomed Mater Res B Appl Biomater. 2005 Jan 15;72(1):186-90.

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03

ISOLATION PRECAUTIONS, SAFETY AND PROCEDURE WORKFLOWS

A practical infection prevention framework

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ISOLATION PRECAUTIONS

DEFAULT

Standard precautions

For all routine care.

Single room occupancy not necessary.

TRIGGER FOR ADDITIONAL CONTROLS

Tissue + procedure risk

Additional controls are driven by anticipated contact with high or low risk tissue:

- Enhanced PPE
- Instrument reprocessing controls
- Waste handling controls
- Environmental cleaning (bleach)

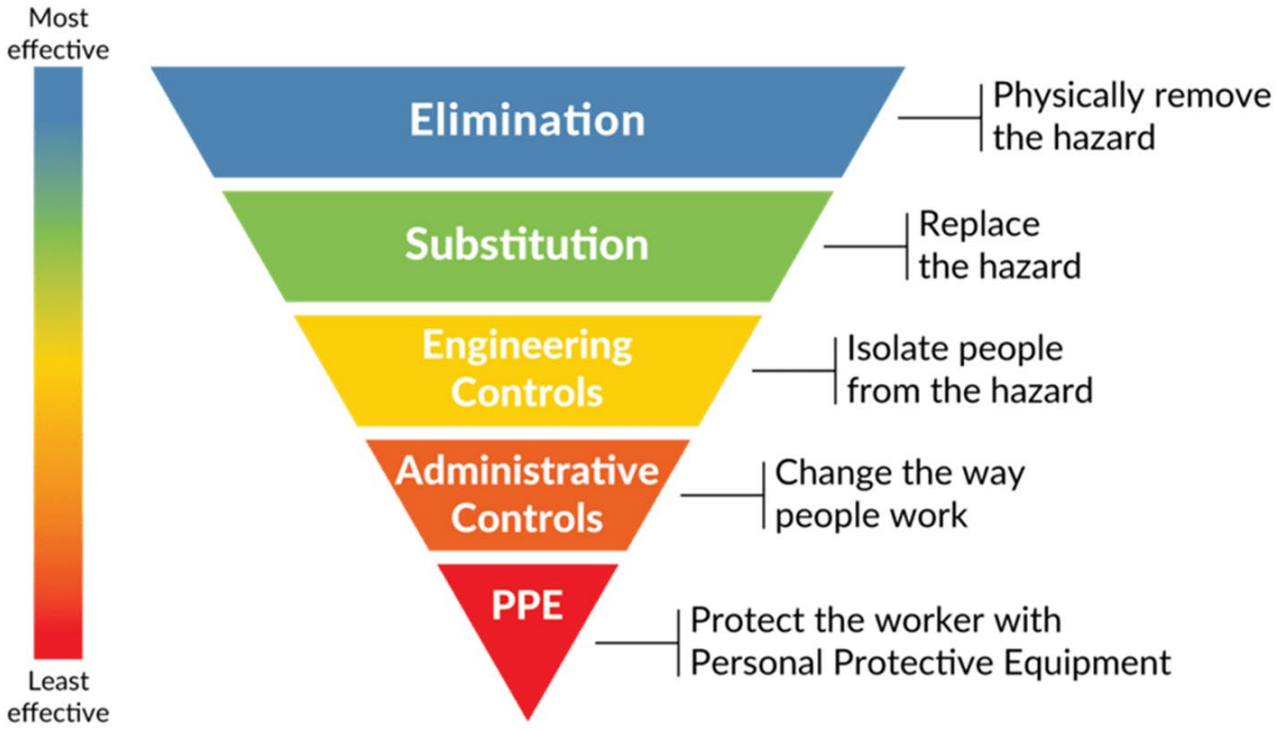
High Risk	Low Risk
Neurosurgery	Lumbar Punctures
Ophthalmologic Surgery	Endoscopy: GI, Pulmonary
Spine Surgery	

Do not delay or deny medically urgent or emergent care. Planning is critical.

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HIERARCHY OF CONTROLS

High Risk or Low Risk Tissues



Hierarchy of Controls | CDC

Elimination:

- Defer nonurgent procedures during rule-out

Substitution:

- Consider alternate procedure approaches
- Use disposable supplies / instruments

Engineering controls:

- Limit traffic
- Environmental cleaning

Administrative Controls:

- Sharps safety:
  - Safe hand-off
  - Blunt-ended suture needles

PPE:

- Fluid resistant gown and mask
- Eye protection / face shield
- Gloves (double gloves for surgery)
- Head and shoe covers as needed for area

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PROCEDURAL / SURGERY WORKFLOW - PLANNING

High Risk or Low Risk Tissues

PLANNING PROMPT

Limit the footprint

Every item entering the field becomes part of the handling decision.

Before the procedure: Make key decisions

- What's the tissue risk level?
- Can the procedure be deferred or altered?
- Do you need to find substitute disposable instruments or use special sets?
- When should the case be scheduled?
- What should be removed from the room or covered?

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PROCEDURAL / SURGERY WORKFLOW - COMMUNICATION

High Risk or Low Risk Tissues

Before the procedure: Notify relevant departments

- Infection control
- Surgical / procedural team
- Pathology / lab (receiving)
- Sterile processing
- Environmental services

Upon death:

- Autopsy
- Morgue
- Decedent affairs



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PROCEDURAL / SURGERY WORKFLOW – ROOM SET UP

High Risk or Low Risk Tissues

REMOVE

Reduce inventory

Take out unnecessary supplies and equipment before the patient arrives.

COVER

Protect surfaces

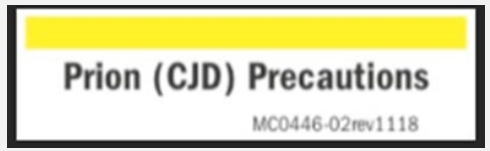
Use fluid-impervious drapes on nearby surfaces when indicated.

STAGE

Gather supplies

Pre-filled formalin specimen containers, CJD labels, bleach and other planned materials ready.

Pro tip: Create a kit!



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PROCEDURAL / SURGERY WORKFLOW – WASTE AND LINENS

High Risk or Low Risk Tissues

BIOHAZARD WASTE

Contaminated items

Discard contaminated PPE, single use supplies, cleaning supplies, and linens in biohazard waste.

SHARPS AND CONTAMINATED FLUIDS

Immediate containment

Place sharps directly into sharps container.

Use solidifier for suction fluids and seal container before discarding in biohazard waste.

NO-RISK FLUIDS + LINEN

Standard pathway

Dispose of no-risk fluids normally (e.g., urine).

Manage uncontaminated linens with standard precautions.

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DISINFECTION

ENVIRONMENTAL SURFACES

AND

NONCRITICAL DEVICES / EQUIPMENT

HIGH-RISK TISSUE

Enhanced pathway

1. Clean visible soil as needed
2. Deactivate using 1:5 dilution (≥ 5.25%) or undiluted bleach for ≥15 min.
3. Rinse surfaces as required and manage chemical waste.

LOW- OR NO-RISK TISSUE

Routine pathway

1. Clean visible soil as needed.
2. Disinfect using standard EPA-registered healthcare disinfectant.

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SPILL RESPONSE

High Risk or Low Risk Tissues

Control the area

Post signs and limit access

Clean

Remove gross soil

Deactivate

High risk: undiluted bleach for 1 hr (>20,000 ppm)

Low risk: undiluted bleach for ≥15 min (>20,000 ppm)

1N NaOH alternatively

Contain

Use solidifiers if needed

Discard materials and PPE as biohazardous waste

Finish

Rinse with water

Manage waste

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OCCUPATIONAL EXPOSURES

First aid immediate actions:

WOUND

Wash

- Encourage bleeding in minor / puncture wounds.
- Wash thoroughly with soap and abundant warm water (avoid scrubbing), then rinse and dry.
- Consider rinsing with bleach for 1 min

EYES

Irrigate

Use saline or an eyewash station if available.

MOUTH

Rinse

Rinse thoroughly with tap water.



- Go to ED if medical attention is needed
- Report exposure to occupational health, supervisor, and fill out incident report, as applicable per your organization's policies

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04

INSTRUMENT HANDLING WORKFLOWS

A practical infection prevention framework

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CJD INSTRUMENT DECISION TREE

Semi-critical or critical instruments

NO-RISK TISSUE

Standard processing

Follow routine instrument processing.

RULE-OUT / SUSPECT

Clean + quarantine

For high- or low-risk tissue, perform point-of-use treatment, manually clean and quarantine until test results are available, or proceed as a probable case.

PROBABLE / CONFIRMED

Incinerate

For high- or low-risk tissue, use disposable instruments when possible. Incinerate contaminated reusable instruments.

Standardize the plan before the next case, not during it.

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CJD INSTRUMENT WORKFLOW

Instruments exposed to high / low risk tissues from rule out / suspect CJD

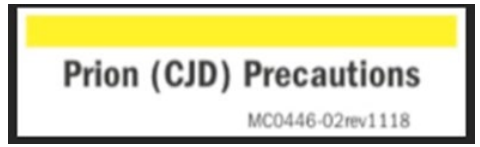
Procedural staff:

- Notify reprocessing supervisor and decontamination area ***in advance***
- Limit how many instrument sets are used (only stock what you need)
- Place in rigid, puncture proof containers with CJD and biohazard labels
  - Discard sharps appropriately
  - Single use devices to biohazard waste
  - Follow standard point-of-use treatment
- Discard PPE in biohazard waste

OPERATIONAL GOAL

Fewer touchpoints

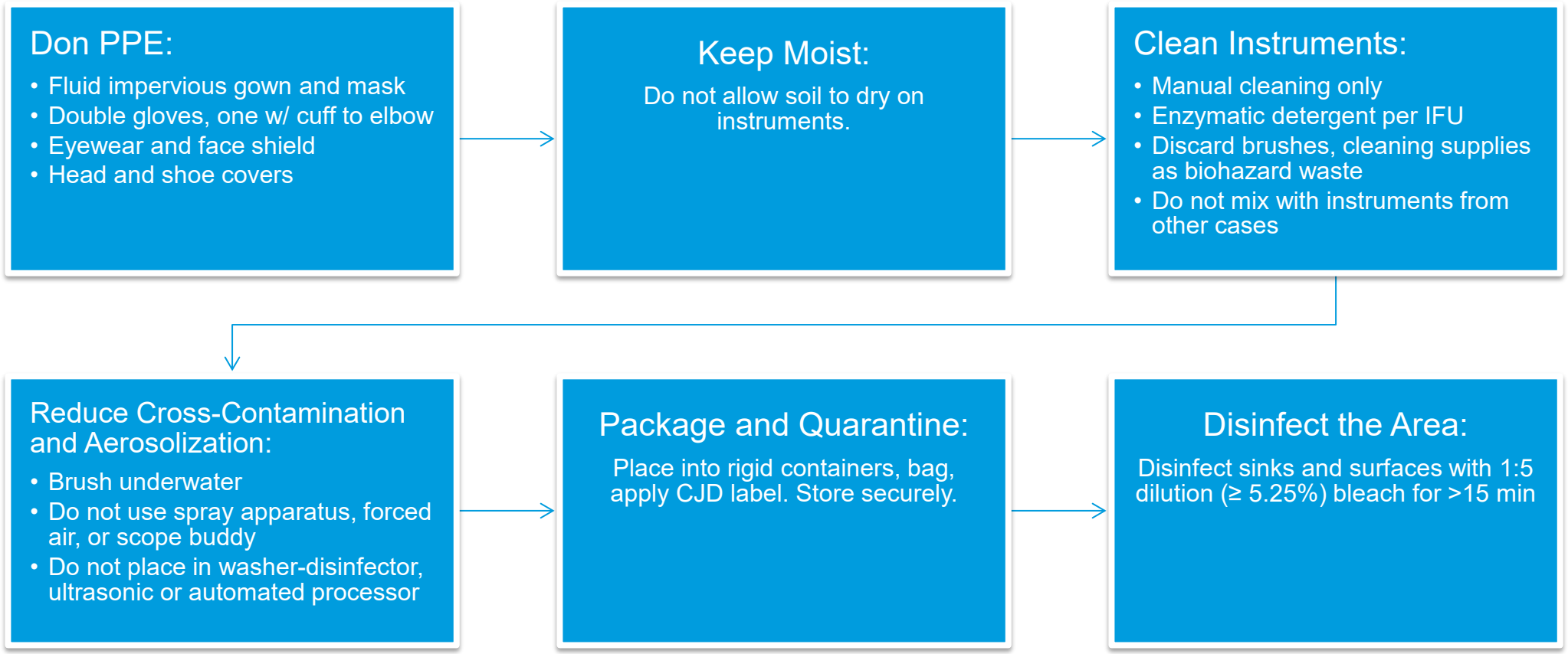
Limit opportunities for exposure, spread and uncertainty.



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CJD INSTRUMENT WORKFLOW

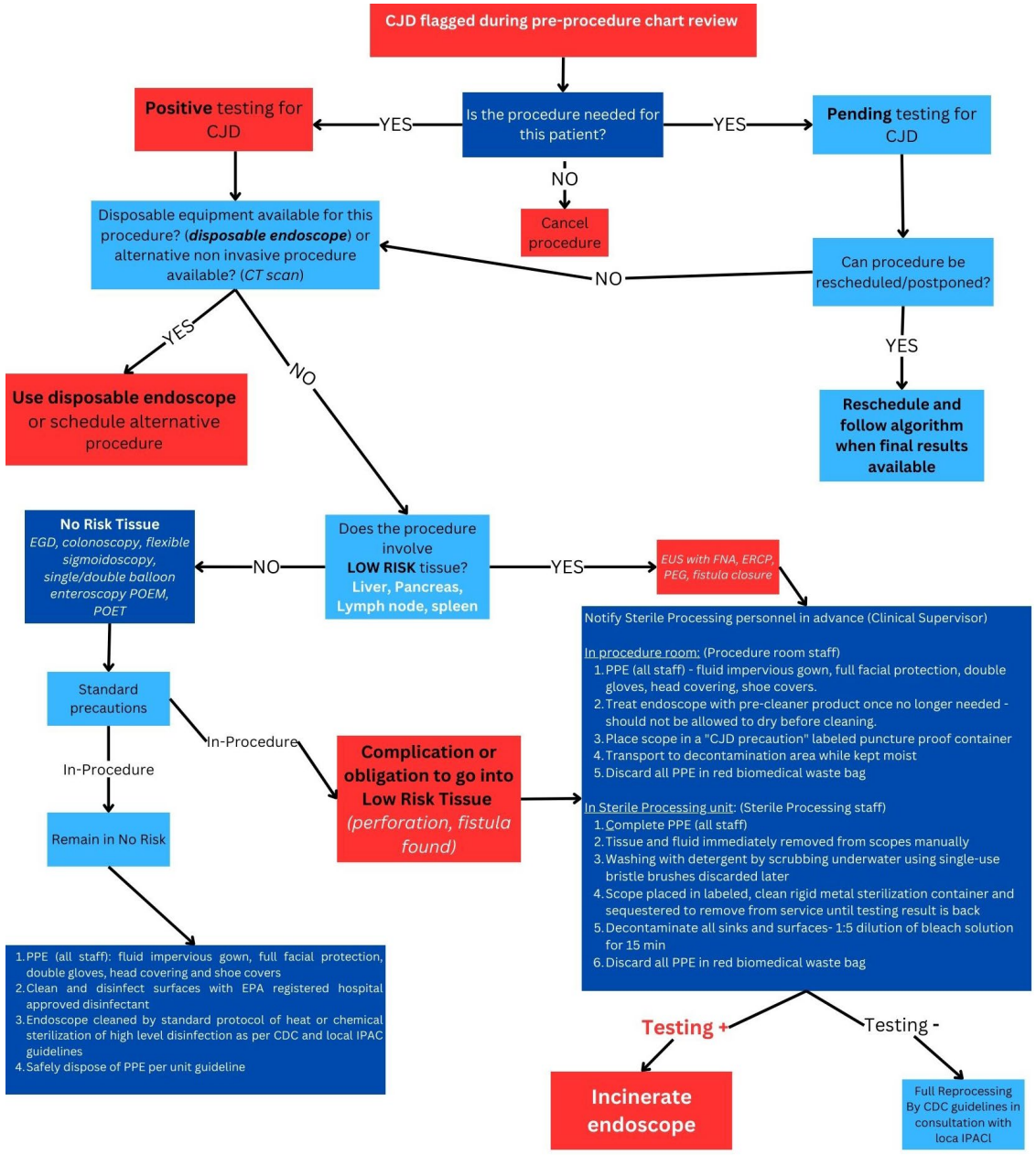
Sterile Processing: Decontamination Prior to Quarantine (rule out / suspect CJD)



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ENDOSCOPY

- Create unique algorithms for GI and Bronchoscopy practices
- Probable / confirmed, low risk tissue:
  - Stock disposable endoscopes or use end-of-life endoscopes
- Rule out / suspect: Clean and quarantine
- WHO/CDC reprocessing:
  - Submerge in 1N NaOH or 20,000 ppm bleach for 1 hour
  - Olympus evaluated material compatibility but not efficacy
  - Efficacy data lacking



Infection Control for CJD | Classic CJD | CDC
Reprocessing Olympus Flexible Endoscopes Exposed to CJD
WHO Infection Control Guidelines for Transmissible Spongiform Encephalopathies
Salameh, et al. A Novel Protocol for Endoscope Handling and Disposal in the Setting of Creutzfeldt-Jakob and Other Prion Disease. AJG 119(10S):p S620-S620, October 2024.

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05

EXPOSURE INVESTIGATIONS

A practical infection prevention framework

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EXPOSURE FOLLOW UP SCENARIO EXERCISE

Patient diagnosed or suspected after a procedure involving reusable instruments

DEFINE

What happened?

Confirm the diagnosis:
- CJD type
- Test status (suspected, probable or confirmed)
- Neurology notes

EHR review:
- Patient exposure history (if any)
- Procedures / surgery and tissues involved

TRACE

Who was exposed?

Patient tracing:
Instrument tracking, surgical records

Staff tracing:
Occupational exposure reports

Create case definition:
Carefully review symptom and diagnostic timeline

CONTROL

Stop further use

Remove instruments/ devices from service, quarantine or incinerate, and clean affected areas.

Ensure patient has infection status / isolation.

COMMUNICATE

Report findings

Treat sensitively. Limit communication to legal, key leadership, and others on as needed basis for interventions.

Plan for staff questions and concerns.

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TAKE HOME MESSAGES



Risk is Contextual:

Transmission risk is a factor of tissue type, amount, route and procedure.



Planning prevents harm:

Early education, communication and procedural workflow planning simplifies every downstream decision.



Use evidence proportionally

Prioritize human data, use animal evidence as support and avoid overly broad precautions.

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THANK YOU!

QUESTIONS & ANSWERS



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