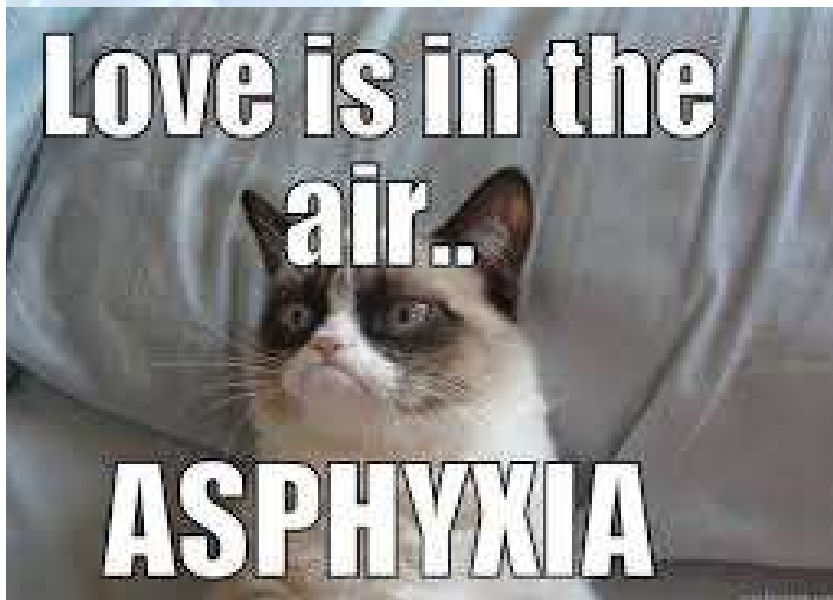
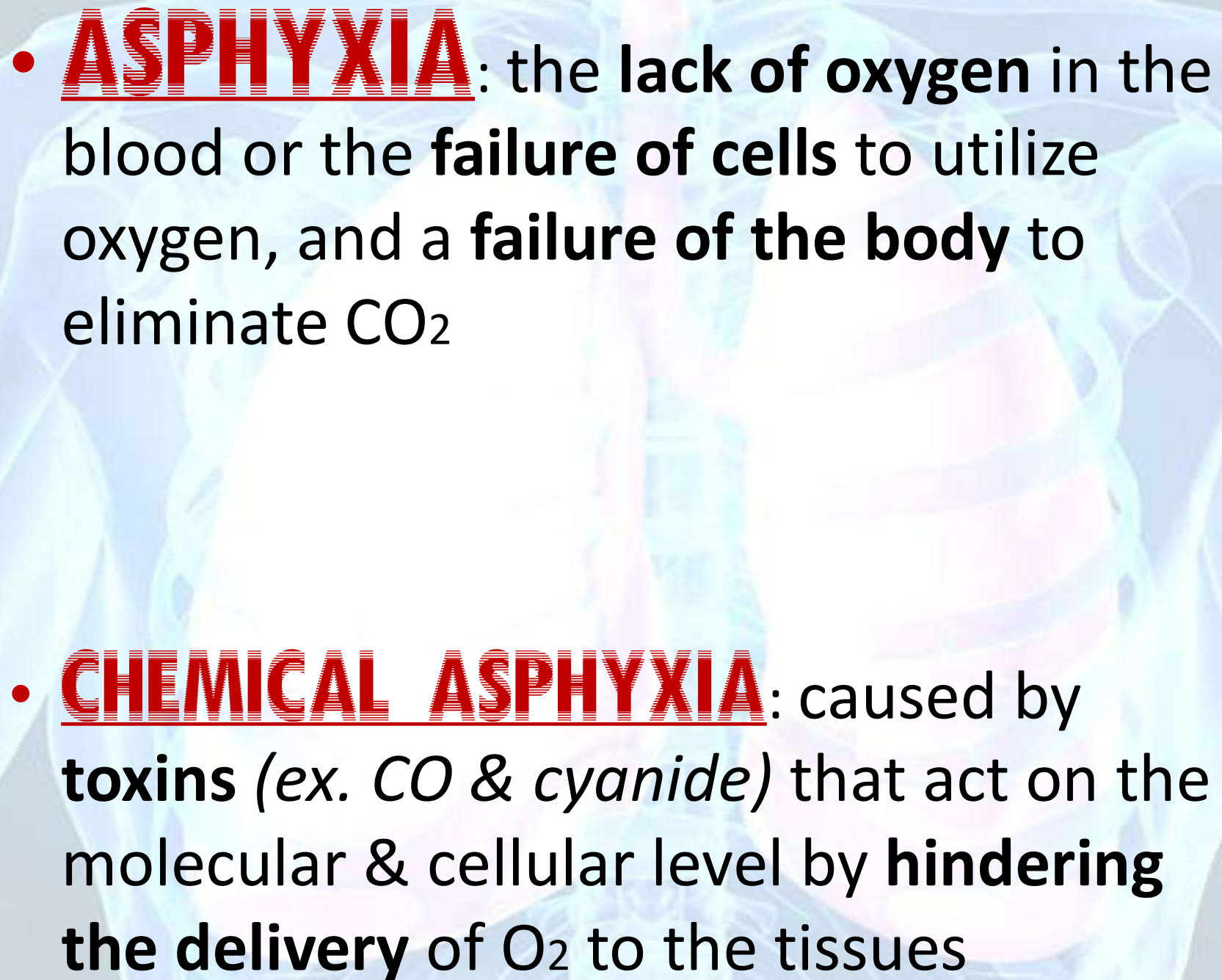


WHAT IS TODAY'S OBJECTIVE?

**TO BE ABLE TO
IDENTIFY THE
PATHOLOGICAL
SIGNS OF
ASPHYXIA**



- 
- **ASPHYXIA**: the **lack of oxygen** in the blood or the **failure of cells** to utilize oxygen, and a **failure of the body** to eliminate CO₂
 - **CHEMICAL ASPHYXIA**: caused by **toxins** (*ex. CO & cyanide*) that act on the molecular & cellular level by **hindering the delivery** of O₂ to the tissues



Technically speaking, **everyone** dies from asphyxia

However, in most cases, the death is **not** attributed to asphyxia, but rather to the underlying condition leading to a cessation of respirations

A death is attributed to asphyxia **only** when the asphyxia **itself** is the condition that causes death

- The **info needed** to diagnose asphyxia may lie **entirely** in the scene investigation and the circumstances of death



CAUSES OF ASPHYXIA

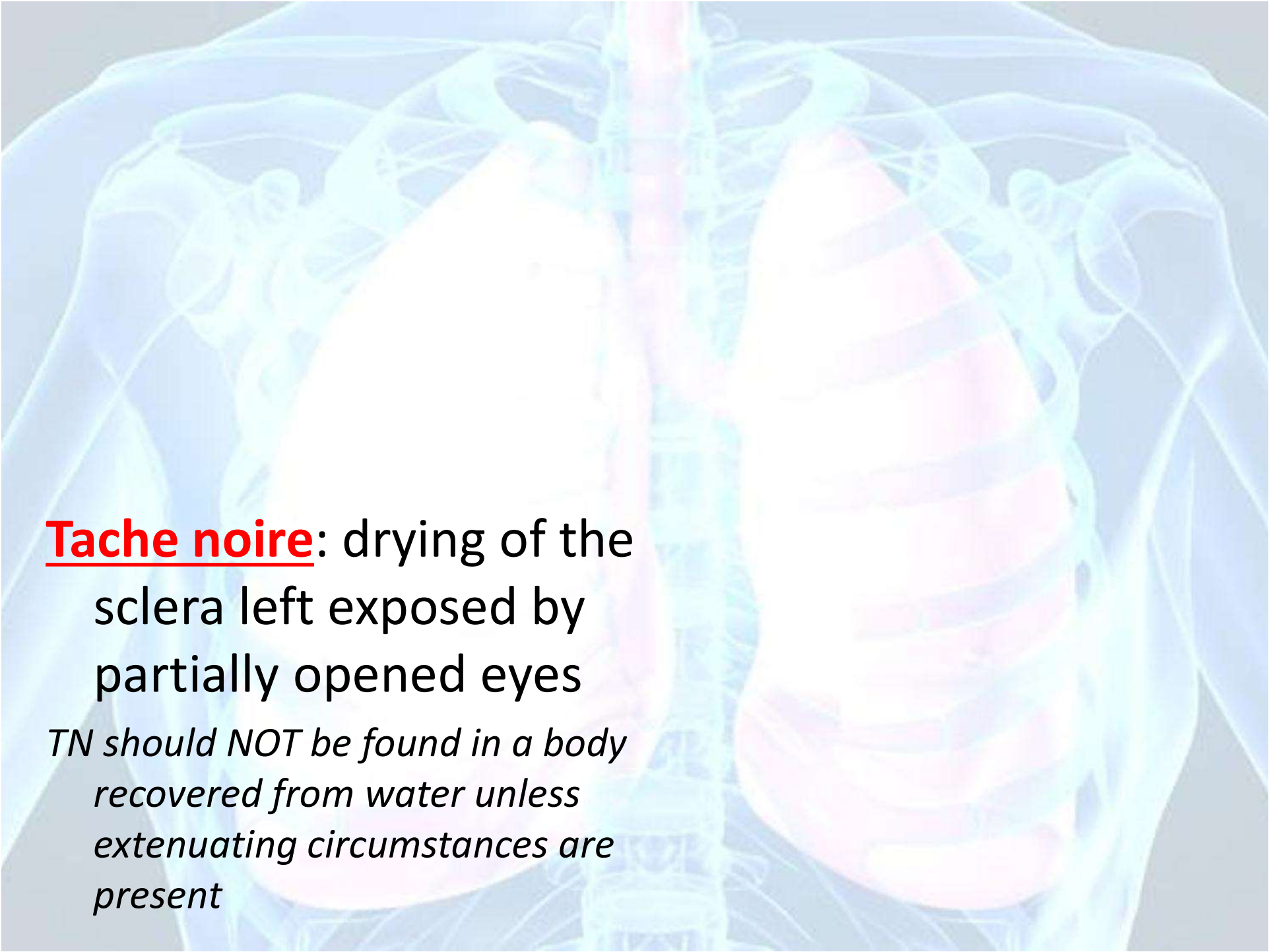
- Breathing air low in O₂
- Compression of external airways (*nose & mouth*)
- Obstruction of internal airways
- External compression of neck/chest
- Awkward positioning of the body

TYPES OF ASPHYXIA

Suffocation, smothering, choking, positional asphyxia, mechanical asphyxia, traumatic asphyxia, hanging, strangulation, and chemical asphyxia

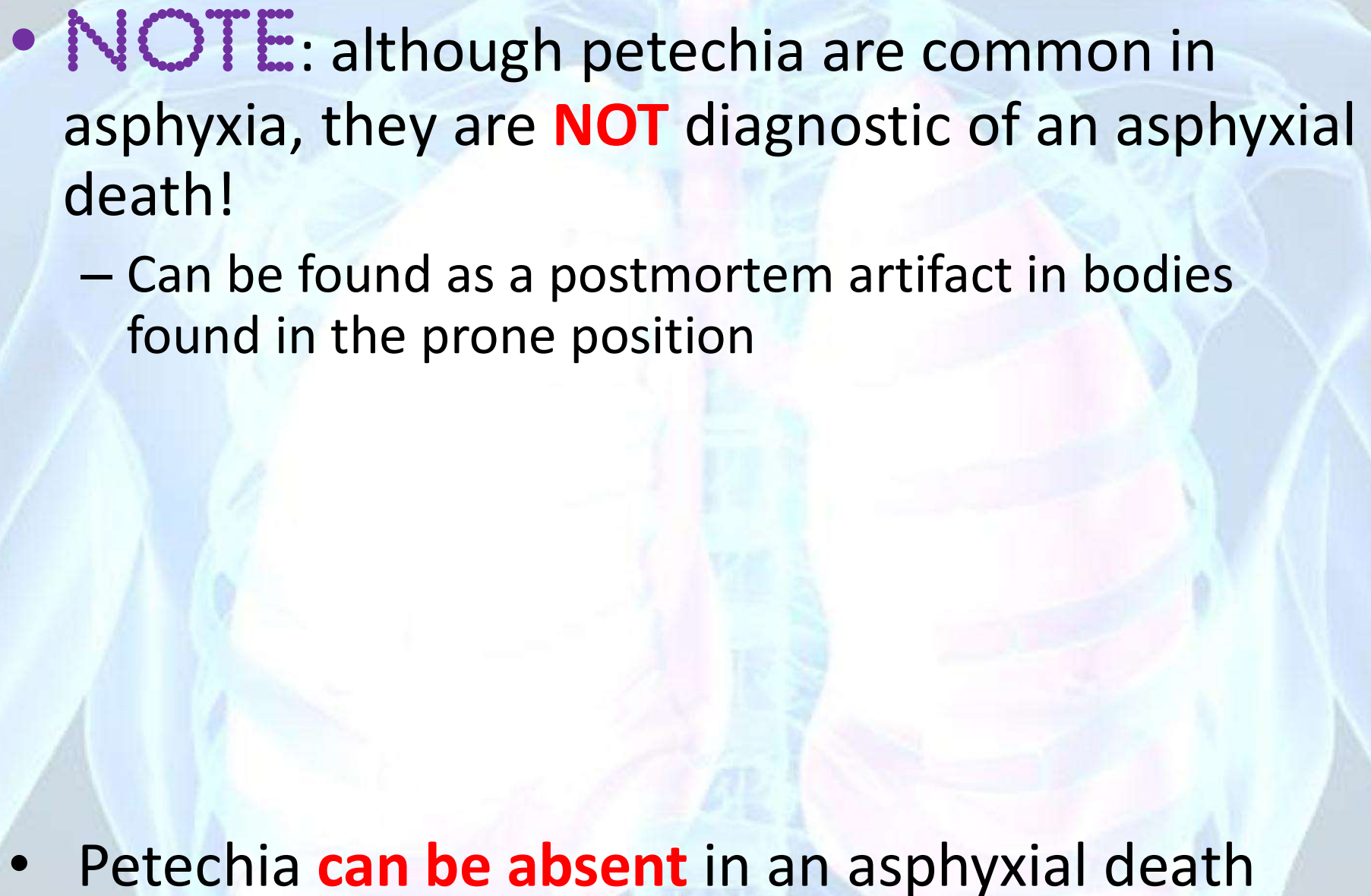
PETECHIA

- Autopsy often show petechia (*pinpoint hemorrhages*) of the bulbar and/or palpebral conjunctiva
 - Less common in the eyelids, neck, face, and other regions of body
- **Petechia** are **caused** by the rupture of venules & capillaries when the venous return from the head is obstructed, while the arterial blood flow to the head is maintained
 - *Veins = low pressure, Arteries = high pressure*



Tache noire: drying of the
sclera left exposed by
partially opened eyes

*TN should NOT be found in a body
recovered from water unless
extenuating circumstances are
present*

- 
- **NOTE:** although petechia are common in asphyxia, they are **NOT** diagnostic of an asphyxial death!
 - Can be found as a postmortem artifact in bodies found in the prone position
 - Petechia **can be absent** in an asphyxial death

SUFFOCATION

- Broad term encompassing many types of asphyxia
 - Entrapment, suffocating gases, smothering, choking, mechanical asphyxia, and traumatic asphyxia
- Therefore, certify asphyxial deaths with **descriptors** that are **as detailed as possible**

ENTRAPMENT

- Type of suffocation in which an individual is in an airtight container & gradually consumes all the available O₂ until there isn't enough left
 - Elements of hyperthermia and/or dehydration **may** also be present
- The “**plastic bag entrapment**” is a common suicide method
 - Toxicology usually shows drugs/alcohol
 - Usually **don't** see petechia



TODAY I LEARNED

There is a perfectly painless of killing someone through nitrogen asphyxiation by cutting off oxygen while still supplying nitrogen so that the body does not experience a suffocating sensation. However, this method is not used by any government as a method of capital punishment.

CARBON MONOXIDE TOXICITY

- Increased CO is inhaled, which binds to RBC hemoglobin, preventing O₂ from binding and being used by body tissues
- Caused by
 - Faulty heating units
 - Vehicle exhaust fumes
- Tissues & blood have a **bright cherry-red** discoloration b/c of the decreased ability of RBCs to release O₂

Carbon Monoxide is an odorless, colorless, non-irritating gas that is the result of incomplete combustion of carbon-containing materials. It is present in exhaust gas, in illuminating gas and in tobacco smoke. Carbon monoxide inhalation causes asphyxia by blocking the respiratory pigment of red blood corpuscles (hemoglobin) from carrying oxygen to the tissues and from returning carbon dioxide to the lungs.

CO saturation	Symptoms
0 to 10%	No symptoms (Cigarette smokers routinely have a level of about 5.6%)
10 to 20%	Tightness across forehead, slight headache
20 to 30%	Headache
30 to 40%	Severe headache, weakness, dizziness, nausea, vomiting
40 to 50%	Increased respirations and pulse, fainting
50 to 60%	Fainting and intermittent convulsions
60 to 70%	Coma, intermittent convulsions, death
70 to 80%	Weak pulse, slow respirations, respiratory failure, death

Lethal level can be as low as 31 %

Other details are:

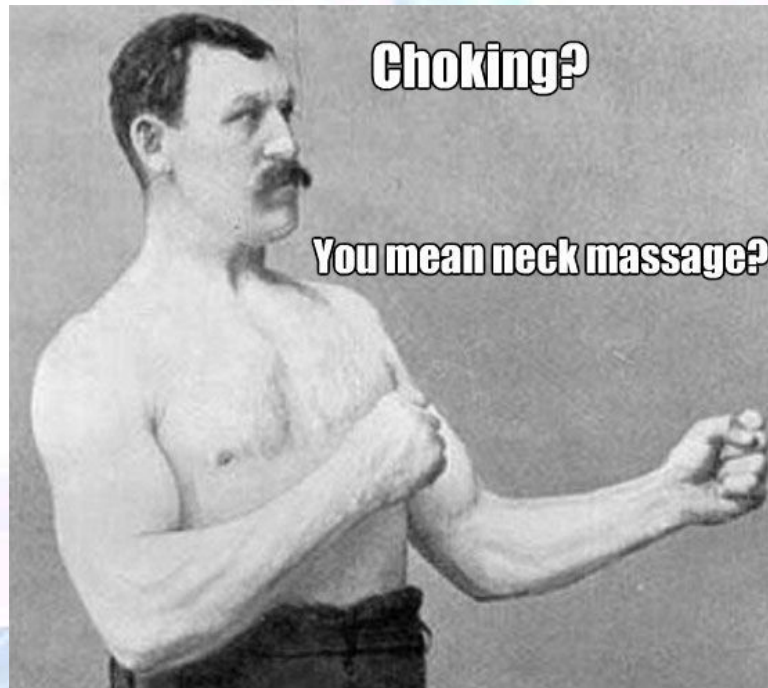
- Humidity, temperature, carbon dioxide and physical activity increase the absorption of carbon monoxide.
- Some illnesses (anemia, emphysema, ASCVD) may cause death at lower levels.
- Rapid loss of CO can occur when a living person is removed from the CO environment into fresh air.
- A concentration of 1/2 % to 1% CO in the atmosphere is rapidly reached in fires and can produce a CO saturation of 75% in 2-15 minutes.
- In postmortem incineration the CO level is not elevated.
- In burned bodies, a CO level less than 10% can indicate that the victim was dead when the fire started. This may also happen when the fire is very sudden such as a flash fire.

SMOTHERING

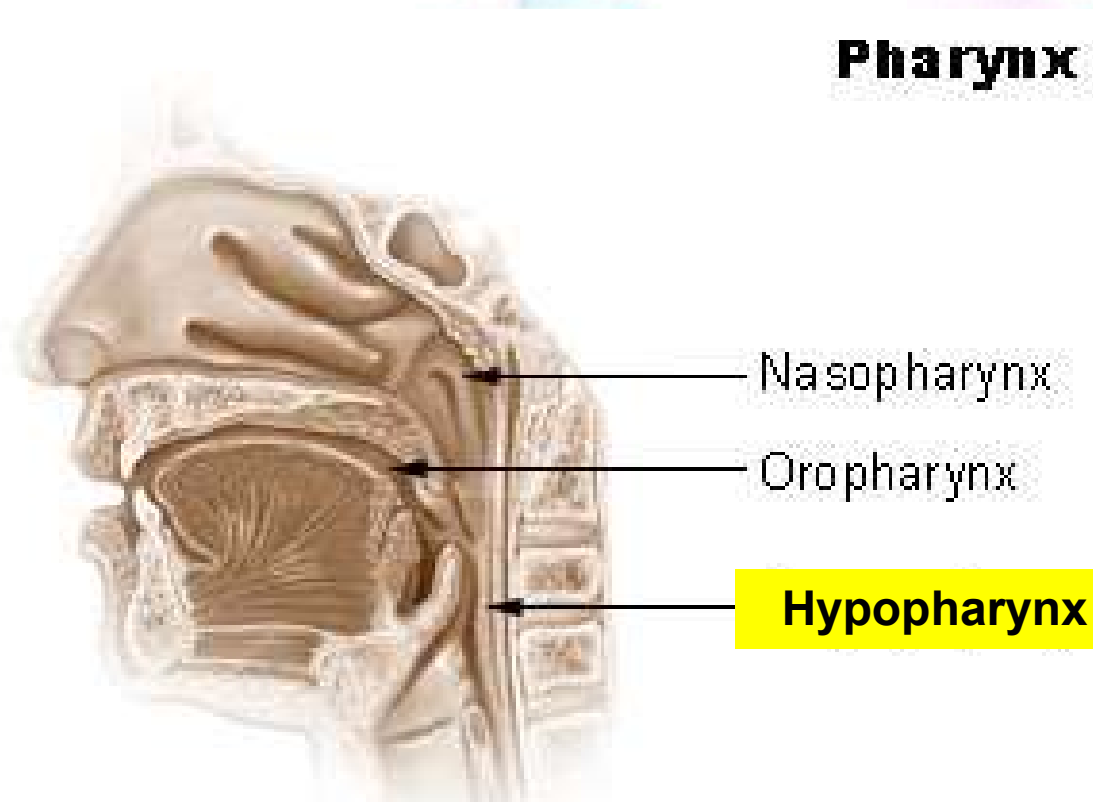
- Form of suffocation in which the external airways (*nose & mouth*) are compressed or blocked, preventing the inspiration of air
- Caused by
 - Putting hands/object over mouth
 - Putting tape over mouth
- **Tears & contusions** in the labial, buccal, and/or gingival mucosa may show a struggle occurred

CHOKING

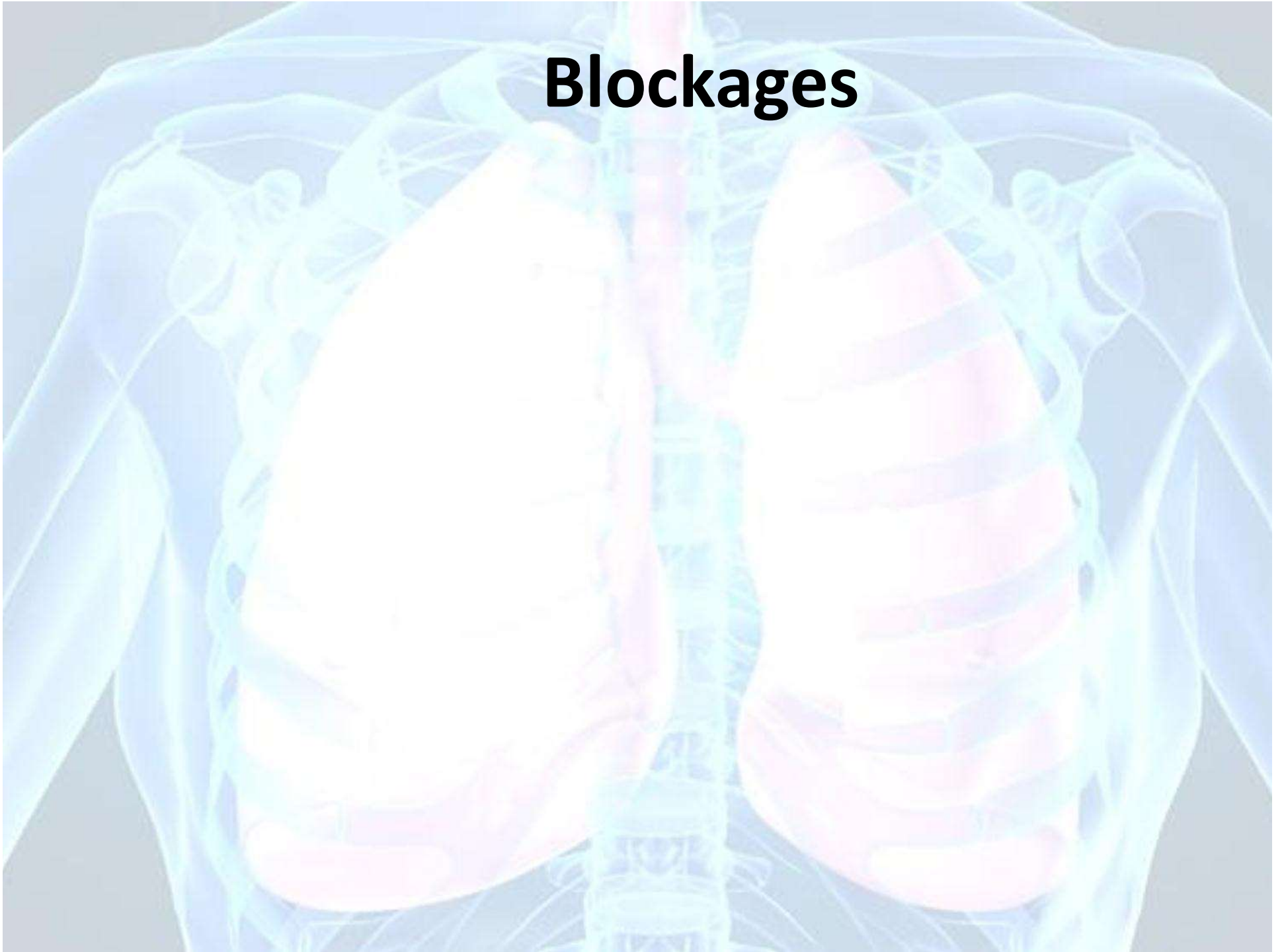
- Internal airways are obstructed
 - Usually accidental: **café coronary**
 - can see food bolus lodged in posterior hypopharynx
 - or see object passes into, and occludes, the trachea or bronchi



- In **all** cases of suspected choking & asphyxia, the **hypopharynx** should be **manually explored** to examine for any obstructing object (gum, peanut butter, coins, etc) that may cause choking



Blockages



What to do if you're choking and no one is around



Place fist above navel while grasping fist with other hand.

Leaning over a chair or counter-top, drive your fist towards yourself with an upward thrust.

Vagal Stimulation & Rapid Death

- Food/objects can cause choking and rarely by **acute & pronounced distention** of the esophagus
 - Mech of Death **is not** airway obstruction, but a **vagally mediated event**: bradycardia, cardiac dysrhythmia, bronchospasm, seizure, etc
- Vagal reflexes arise not only from the esophagus, but also from the **pharynx and larynx**
 - This is why some choking deaths occur so quickly

MECHANICAL ASPHYXIA

- Requires that either the body is positioned in such a way that respiration is compromised (*positional*) or enough external pressure is placed on **the chest, neck, or other areas** to make respiration difficult
- If caused by severe compression from a large, heavy object, it is called traumatic asphyxia
- Uncompressed areas (chest, neck, face) appear congested & cyanotic – **Tardieu spots** & petechia are present near junction of compressed/noncompressed areas

M.E. finds that Staten Island woman found in clothing box choked to death

Published: Monday, March 12, 2012, 6:03 AM Updated: Monday, March 12, 2012, 6:04 AM

STATEN ISLAND, N.Y. -- The Sunnyside woman who died after getting stuck in a clothing donation box Saturday afternoon choked to death, according to the results of an autopsy performed yesterday.

Melissa L. Mazzeo, 51, died of "asphyxia by neck compression," said Ellen Borakove, a spokeswoman for the city medical examiner's office. Her death has been ruled an accident, Ms. Borakove said.

Ms. Mazzeo died Saturday, after she climbed into the clothing and shoe drop on the side of Victory Superette and Bagels, on Victory Boulevard near Clove Road, a little after noon, according to police.

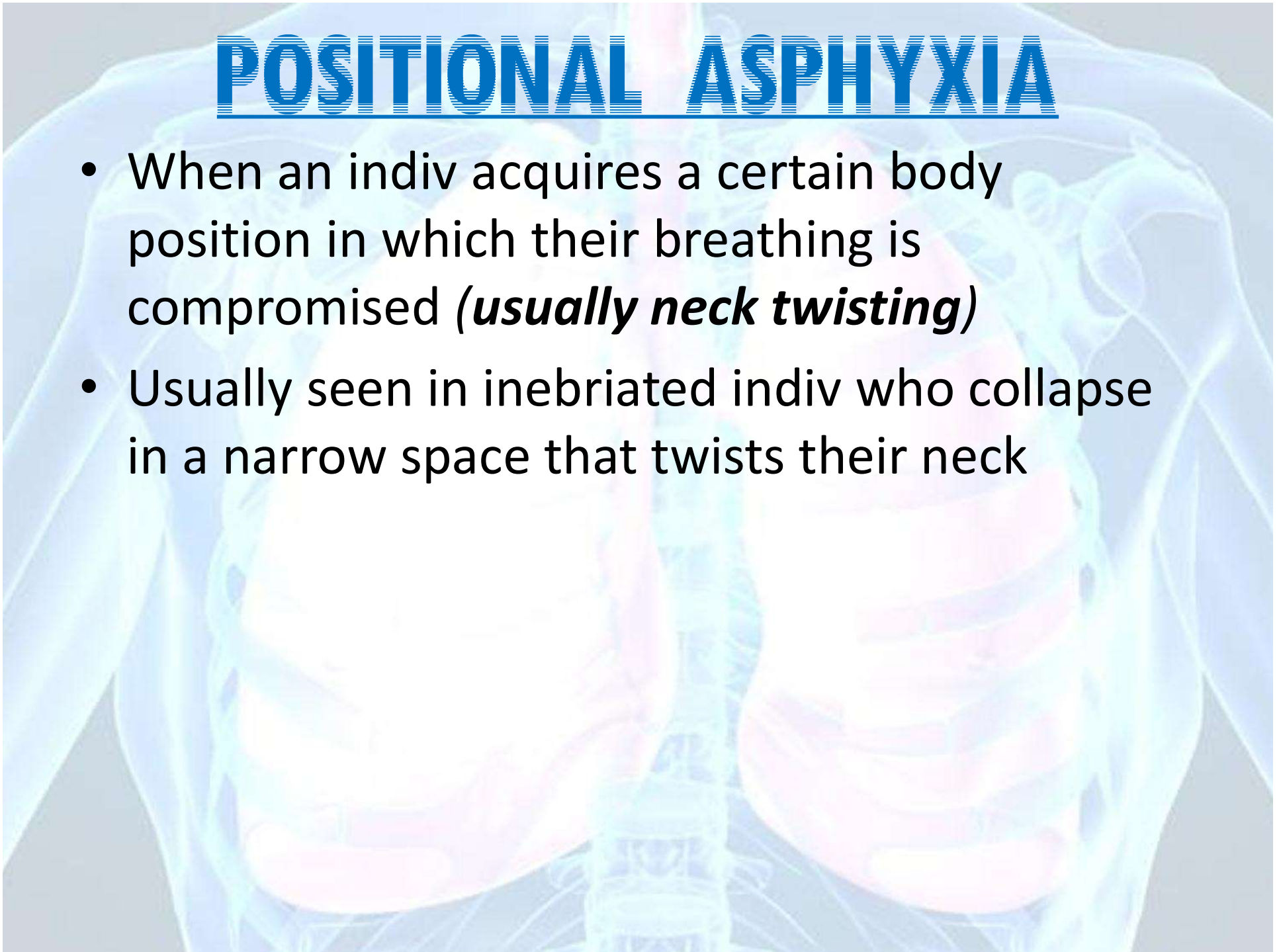
When she tried to climb back out, though, the container's metal door dropped onto her head, trapping and suffocating her, police said.

Her sister, Jennifer Iannoconi, wouldn't comment yesterday about her death, and provided few details about her life, except to say that she had a love for dance and music. Ms. Mazzeo was born in Brooklyn, but moved to Sunnyside in 1977, her sister said.

Her neighbors on Sunnyside Terrace described her as "eccentric" and disturbed -- she would often bring trash, clothing and other items home and spread them out on her lawn.

POSITIONAL ASPHYXIA

- When an indiv acquires a certain body position in which their breathing is compromised (*usually neck twisting*)
- Usually seen in inebriated indiv who collapse in a narrow space that twists their neck



Coroner says trimmer trapped in palm tree suffocated

By Sun Staff ([contact](#))

Wednesday, Dec. 24, 2014 | 10:39 a.m.

A tree trimmer who died Monday after being [trapped in a palm tree](#) in North Las Vegas suffocated, according to the Clark County Coroner's Office.

Carlos Dye, 49, of North Las Vegas died of positional or mechanical asphyxia, the Coroner's Office said. His death was ruled accidental.

Positional asphyxia is a condition that arises because of a particular body position that causes mechanical interference with breathing, according to the National Institutes of Health.

Deaths from suffocation can occur when palm fronds collapse over a trimmer's head, pinning him to the tree. The California Department of Public Health created a YouTube video highlighting the danger faced by trimmers.

In this case, firefighters were alerted about 4:30 p.m. Monday to a man stuck in a 25- to 30-foot palm tree in the 1700 block of James Street, near Owens Avenue and Pecos Road, North Las Vegas Fire Department spokesman Cedric Williams in a statement.

Risks of trimming palm trees



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Posted February 2, 2015 - 2:48pm | Updated February 2, 2015 - 5:46pm

Meth, Ecstasy factors in tree trimmer's asphyxiation death



The home where Daniel Wynn Smith, a tree trimmer, died after being trapped in a palm tree on Sunday, is seen at 1632 Palmer St., near East Owens Avenue and North Pecos Road, in North Las Vegas on Monday, Jan. 12, 2015. (Chase Stevens/Las Vegas Review-Journal)



By KIMBER LAUX
LAS VEGAS REVIEW-JOURNAL

The [man who died while trimming a palm tree Jan. 11](#) in North Las Vegas was intoxicated at the time of his death, according to the Clark County coroner's office.

Daniel Wynn Smith, 46, had methamphetamine and MDMA — or Ecstasy — in his system when he died, according to information the coroner released Monday. His lifeless body was pulled from a tree in a yard in the 1600 block of Palmer Street, near the intersection of Owens Avenue and Pecos Road.

Second tree trimmer dies in same neighborhood



AA

NORTH LAS VEGAS (KSNV My News 3) -- A tree trimmer died Sunday afternoon in a palm tree just blocks from where another trimmer died a few weeks ago.

f

"The crews got to him rather quickly, about 15 minutes after they got the call, but it was too late," said North Las Vegas Fire Department Captain Cedric Williams.

t

The accident occurred shortly before 2 p.m. at 1632 Palmer St., near Owens Avenue and North Pecos Road.

e

"He was trying to cut away the fronds and got trapped," Williams said. "The coroner will have to determine the exact cause of death."

Williams said he didn't know how long the man was trapped in the tree.

Newborns at risk

- In newborns the airway is kinked due to baby's heavy head resting with his chin on his little chest. However, it can also happen in all directions your little one's head can be turn.

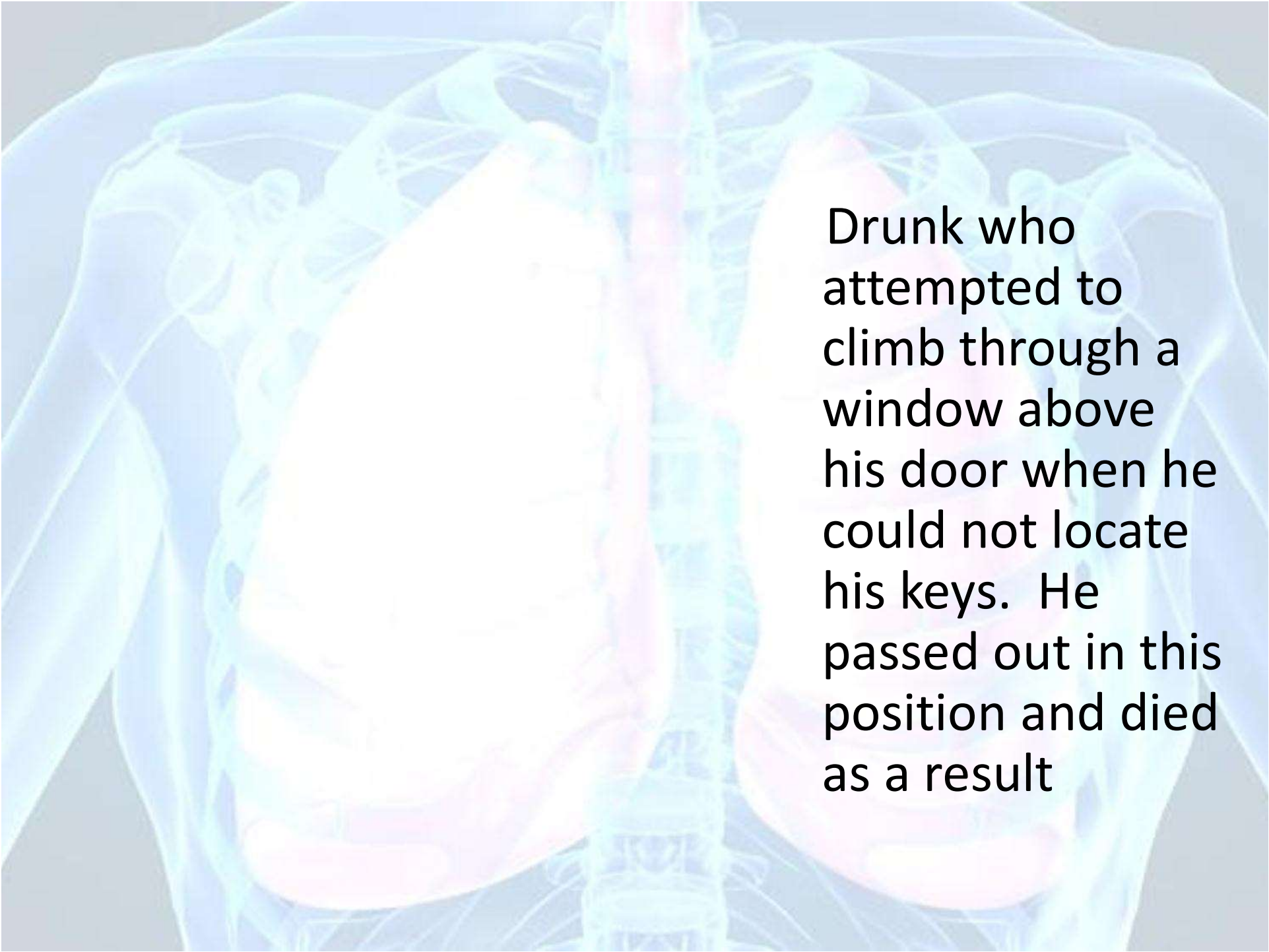


- **Who is at risk?**

Newborns from 0-4 month old are the greatest risk group.

- ❖ Babies under 4 months old
- ❖ Newborns with low birth weight
- ❖ Premature babies
- ❖ Babies with hypotonia (low muscle tone)
- ❖ Babies placed in reclined baby holding devices





Drunk who
attempted to
climb through a
window above
his door when he
could not locate
his keys. He
passed out in this
position and died
as a result