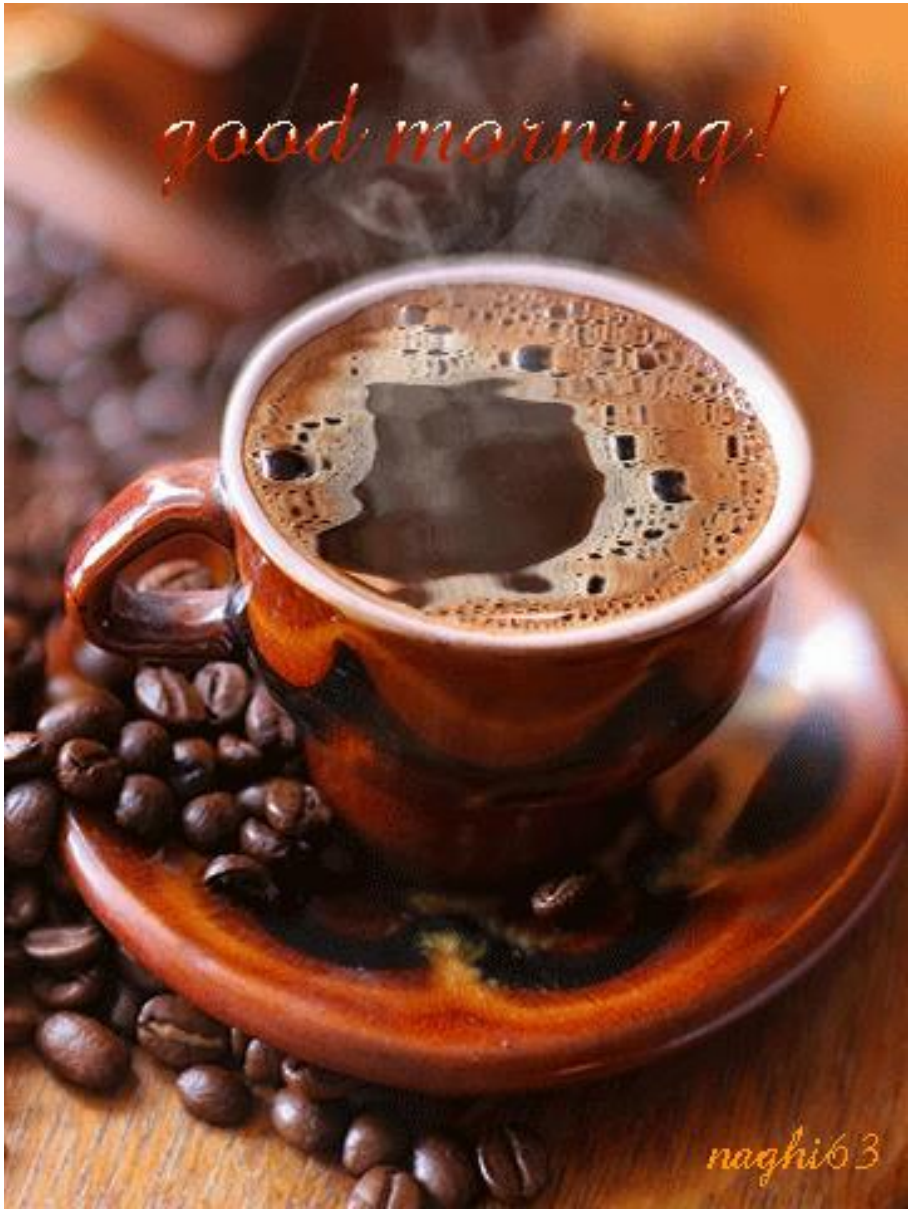

good morning!
naghi63

# **F**ascinating **F**eatures and **M**ysterious **M**anifestations of Disease

OLLI @ University of Illinois

Fall 2022 Semester

Néstor A. Ramírez, MD, MPH

# Plan for the Course

- Session 1: Diseases with a color
- Session 2: Diseases with an odor or a taste
- Session 3: Textures or Sounds of Disease
- Session 4: Diseases with unusual appearance
- Session 5: Flying, crawling & burrowing critters
- Session 6: Forgotten or ignored epidemics
- Session 7:
- Session 8:

Medical detectives solve mysterious cases

# Plan for the Session

- The “Asleep” Epidemic & Awakenings
- African Sleeping Sickness
- Cocoliztli epidemics
- Sweating Sickness
- Ergotism
- The Dancing Manias
- St. Vitus’ Dance
- Tarantism
- Tigretier

# Session 6

## Forgotten or Neglected Epidemics

Encephalitis Lethargica

# “THE ASLEEP EPIDEMIC”

# Encephalitis Lethargica (EL) (1)

The Forgotten Epidemic

Von Economo's disease.

World Pandemic in early 20th century.

Patients fell asleep indefinitely.

Called *Nona*: "the living dead".

Not comatose, just would not wake.

Affected 5M with mortality 40%.

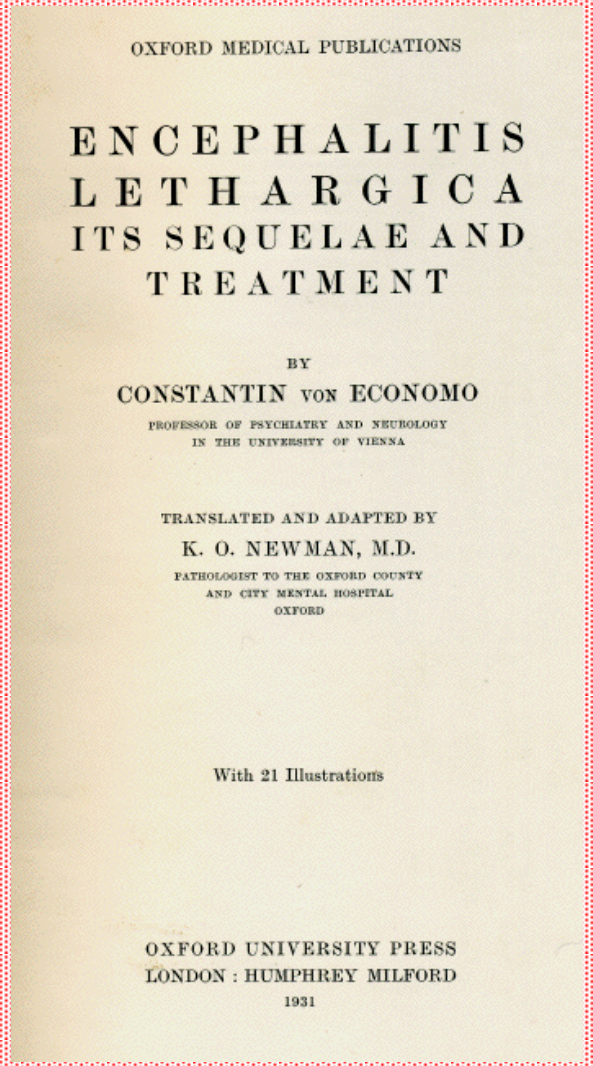
About 1.6 Million deaths 1915-1926.

# Encephalitis Lethargica (EL) (2)

- Between 1750 and 1800, France & Germany experienced minor epidemics of "*coma somnolentum*".
- In Italy, after the influenza epidemic of 1889–1890, a severe epidemic of somnolent illness (*Nona*) appeared.
- Parkinsonism, myoclonus, hyperkinetic hiccough, tics, chorea and other sequelae developed in the few who survived the *Nona*.

# Encephalitis Lethargica (EL) (3)

- Attacks the brain, leaving victims in a statue-like condition, speechless and motionless.
- Between 1915 and 1926 an epidemic of EL spread around the world.
- Many survivors never returned to their pre-morbid vigor.



OXFORD MEDICAL PUBLICATIONS

ENCEPHALITIS LETHARGICA ITS SEQUELAE AND TREATMENT

BY

CONSTANTIN von ECONOMO

PROFESSOR OF PSYCHIATRY AND NEUROLOGY IN THE UNIVERSITY OF VIENNA

TRANSLATED AND ADAPTED BY

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With 21 Illustrations

OXFORD UNIVERSITY PRESS
LONDON : HUMPHREY MILFORD
1931

# Encephalitis Lethargica (EL) (4)

- In 1917 Vienna, clinics were full with patients nodding off, and nervous spouses or parents explaining how they'd fall asleep walking or while chewing food.
- They displayed tics and repeated words and their eyes seemed disconnected from their brain, unfocused and unable to register neighboring surroundings.
- Similar cases were reported in London and New York.

# Encephalitis Lethargica (EL) (5)


- Constantin Economo von Van Serff (1876-1931), Austrian psychiatrist and neurologist.
- Investigated the neuronal cytoarchitecture of the human brain.
- Was a flying enthusiast and flew as an Army pilot in WWI.
- Described and studied EL in 1916.

# *Encephalitis Lethar*gica (5)
## (Signs & Symptoms)

- High fever
- Sore throat
- Headache
- Lethargy
- Double vision
- **Delayed** physical response
- **Slow** mental response
- Sleep inversion

- *Akinetic mutism*
- Catatonia
- Parkinsonism
- Oculogyric crises
- Upper body weakness
- Muscular pains
- Neck rigidity
- Behavioral changes
- *Klazomania*

# Encephalitis Lethargica (EL) (6)

# Encephalitis Lethargica (EL) (7)

"Entranced"

"Awakened"

"Blocked"

Rose R.

# Encephalitis Lethargica (EL) (8)

- Most virulent between Oct. 1918 and Jan. 1919, and disappeared in 1927 as abruptly and mysteriously as it first appeared.
- EL pandemic paralleled the 1918 Spanish influenza pandemic.
- Maybe the influenza virus potentiated the effects of the encephalitis virus or lowered resistance to it.

# Encephalitis Lethargica (EL) (9)

- Since then, it has been only sporadic.
- Autopsy pathology definitely showed areas of lesions in various areas of the brain tissue.
- ⅓ of those affected died in the acute stages, ⅓ developed post-encephalitic Parkinson's, and the remaining ⅓ recovered almost completely.
- To date, scientists do not agree on the cause.

# AWAKENINGS

# Awakenings

- In 1969, Oliver Sacks worked with catatonic patients in a mental hospital in the Bronx.
- He extensively documented the patients' issues and reactions to treatment.
- He used a medication, L-DOPA, that had recently been described for Parkinson's.
- Wrote a book about his experiences: *Awakenings*

# Awakenings

- "They would be conscious and aware – yet not fully awake; they would sit motionless and speechless all day in their chairs, totally lacking energy, impetus, initiative, motive, appetite, affect or desire.

- They registered what went on about them without active attention, and with profound indifference.

- They neither conveyed nor felt the feeling of life; they were as insubstantial as ghosts, and as passive as zombies."

Oliver Sacks, Awakenings, 1990

# Awakenings
## L-DOPA

| Levodopa, is a precursor of the cathecolamine neurotransmitters: | Used to treat Parkinson's symptoms |
| --- | --- |
| • dopamine<br>• norepinephrine (noradrenaline)<br>• epinephrine (adrenaline) | • **Most** responsive : Bradykinesia and rigidity<br>• **Less** responsive: Tremors<br>• **Least** responsive: Swallowing, Speech, postural instability and freezing gait |

# Awakenings

- 1997 movie about Dr. Oliver Sacks and his experiences with EL in a hospital in The Bronx, New York City.
- Shows the very transient improvement in symptoms after starting L-dopa in several EL chronic patients.
- Main character, Leonard (Robert De Niro) has amazing, albeit temporary, improvement, only to have symptoms recur.

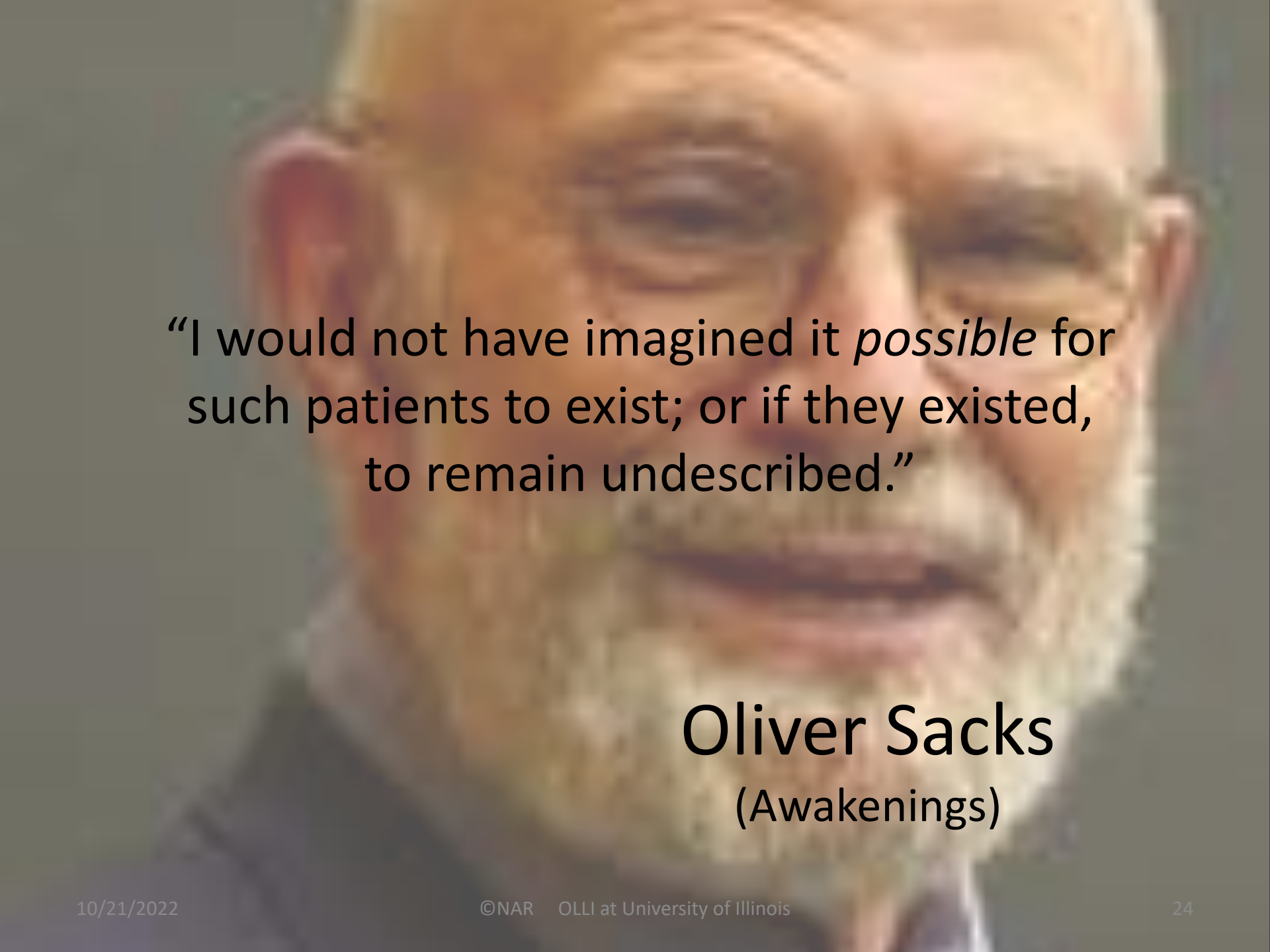
# Awakenings

- Several patients showed an astounding and very rapid improvement.
- It was as if they had suddenly awakened after many years of catatonic lethargy, and regained their lost life.
- Leonard, the main patient in the movie called the drug L-dopamine “resurrectamine”.
- The effect was short-lived.

# Awakenings


Robin Williams as
"Dr. Malcom Sayer"

Dr. Oliver Sacks


"I would not have imagined it *possible* for such patients to exist; or if they existed, to remain undescribed."
Oliver Sacks
(Awakenings)

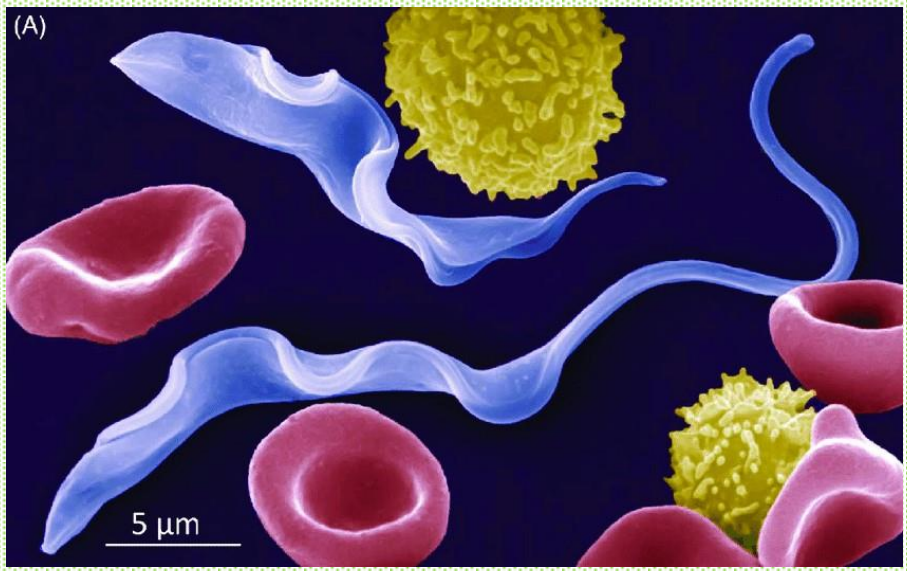
Human African Trypanosomiasis

# SLEEPING SICKNESS

# African Trypanosomiasis (1)

"Sleeping Sickness"

- Infection by *Trypanosoma brucei gambiense* (TbG) or brucei *rhodesiense* (TbR).




- TbG causes over 98% of reported cases.

- Both are transmitted by the bite of an infected *tsetse* fly and are most common in rural areas.

# African Trypanosomiasis (2)

"Sleeping Sickness"

- Infections with *T. brucei gambiense* occur from the West coast of Africa eastward to the East African lakes and southward to the Congo River basin.
- Cases caused by *T. brucei rhodesiense* are limited to the highlands of central eastern and southern Africa.
- Several major epidemics of sleeping sickness occurred in the 20th century, but the number of new cases reported annually has declined significantly.
- In 2012 WHO published a plan targeting the elimination of sleeping sickness as a public health problem by 2020.

# African Trypanosomiasis (2)

"Sleeping Sickness"

- There have been several epidemics in Africa over the last century:
  - one between 1896 and 1906, mostly in Uganda and the Congo Basin
  - one in 1920 in a number of African countries; and
  - the most recent epidemic started in 1970 and lasted until the late 1990s.

# Tsetse Fly
## Modern Distribution

Mostly in moist savannas and woodlands with more than 20 inches rainfall/year.

# African Trypanosomiasis (2)

"Sleeping Sickness"

- It is recommended to do an exhaustive, active screening of the population at risk to identify early-stage patients and reduce transmission by eliminating their reservoir status,
- Exhaustive screening requires a major investment in human and material resources.
- In Africa such resources are often scarce, particularly in remote areas where the disease is mostly found.
- As a result, some infected individuals may die before they can ever be diagnosed and treated.

# African Trypanosomiasis

Other ways in which people are infected:

- Mother-to-child infection: the trypanosome can cross the placenta and infect the fetus.
- Transmission through other blood-sucking insects.
- From wild animal host reservoirs.
- Accidental infections in laboratories.
- Transmission through sexual contact has been reported.

# African Trypanosomiasis (5) Incidence 2019

Less than 1,000 new cases: Democratic Republic of Congo (70% of reported cases).

10 to 100 new cases: Angola, Central African Republic, Chad, Congo, Gabon, Guinea, Malawi and South Sudan.

1 to 10 new cases: Cameroon, Côte d'Ivoire, Equatorial Guinea, Uganda, Tanzania, Zambia and Zimbabwe.

Sporadic cases: Burkina Faso, Ghana, Kenya and Nigeria.

No new cases: Benin, Botswana, Burundi, Ethiopia, Gambia, Guinea Bissau, Liberia, Mali, Mozambique, Namibia, Niger, Rwanda, Senegal, Sierra Leone, Swaziland and Togo.

# African Trypanosomiasis

## Incidence

- During the last epidemic the prevalence reached 50% in several villages in Angola, the Democratic Republic of the Congo, and South Sudan.
- Sleeping sickness was the 1st or 2nd greatest cause of mortality in those communities, even ahead of HIV/AIDS.
- The estimated population at risk is 55 million people for the period 2016–2020; with 3 million people at moderate or higher risk.

# African Trypanosomiasis (5)

"Sleeping Sickness"

- In the past, epidemics were partly controlled by giving prophylactic doses of *pentamidine* to village populations.
- In East Africa, elimination of wild animal host reservoirs for the parasites was done.
- This reduced tsetse fly populations, but neither the flies nor the disease were successfully exterminated.

# African Trypanosomiasis (3)

"Sleeping Sickness"

- For the first time in 50 years, the number of reported cases fell under 10,000 in 2009.
- In 2020, fewer than 700 cases were reported to WHO:
  - 85% caused by T. brucei gambiense.
  - 15% caused by T. brucei rhodesiense.
- Between 1999 and 2021, the reported number of new cases of:
  - *T. b. gambiense,* the **chronic** form fell from 27,862 to 747 (97%).
  - T. b. rhodesiense, the **acute** form fell from 619 to 55 (91%).
- Sleeping sickness is curable with medication but is fatal if left untreated.

# African Trypanosomiasis (4)

First: The bite!

- Bite develops into a red sore .
  - Fever
  - Muscle and joint ache
  - Swelling of the lymph glands,
  - Irritation
  - Headache.
- Advanced disease attacks the CNS.
  - Changes in personality
  - Alterations in the biological clock
  - Difficulty walking, talking & eating
  - Sleepiness, Seizures
  - Coma, DEATH

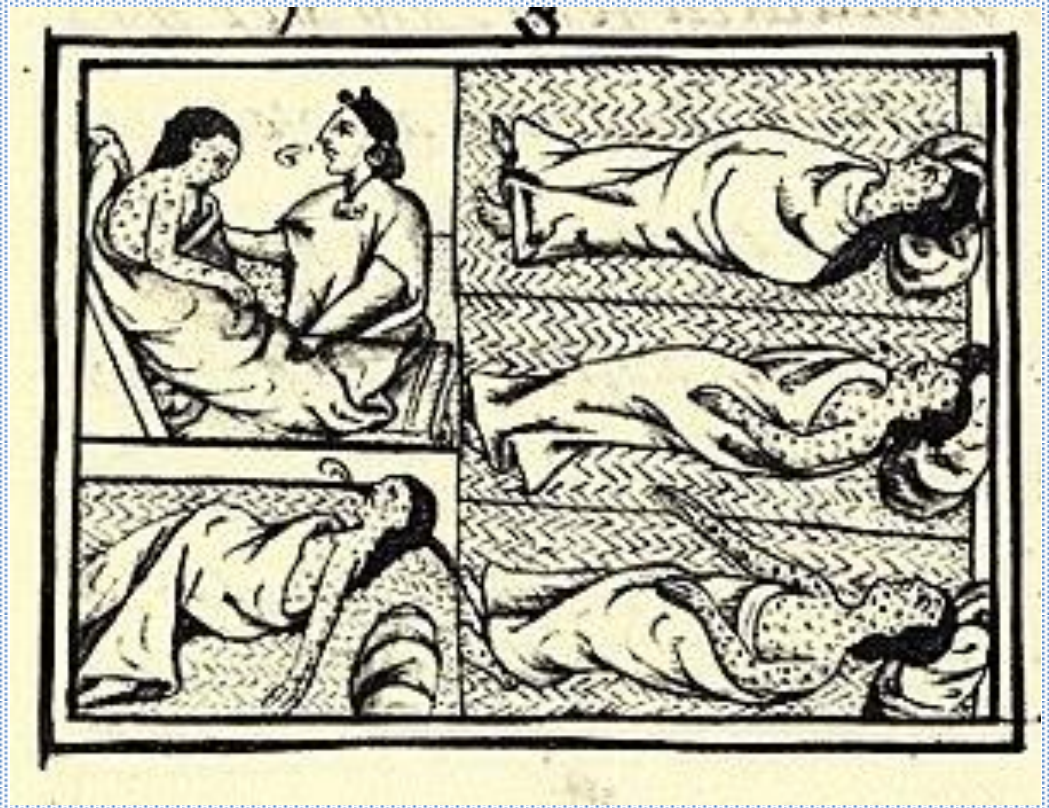
# African Trypanosomiasis (5)

"Sleeping Sickness"

- *Trypanosoma b. gambiense,* causes a **chronic** disease that can persist for months or years with occasional mild symptoms before it enters the Central Nervous System.

- *Trypanosoma b. rhodesiense*, causes an **acute** illness which can cause death within 3 to 12 months of infection.

# Questions? 1



# THE COCOLIZTLI EPIDEMICS

# Cocoliztli

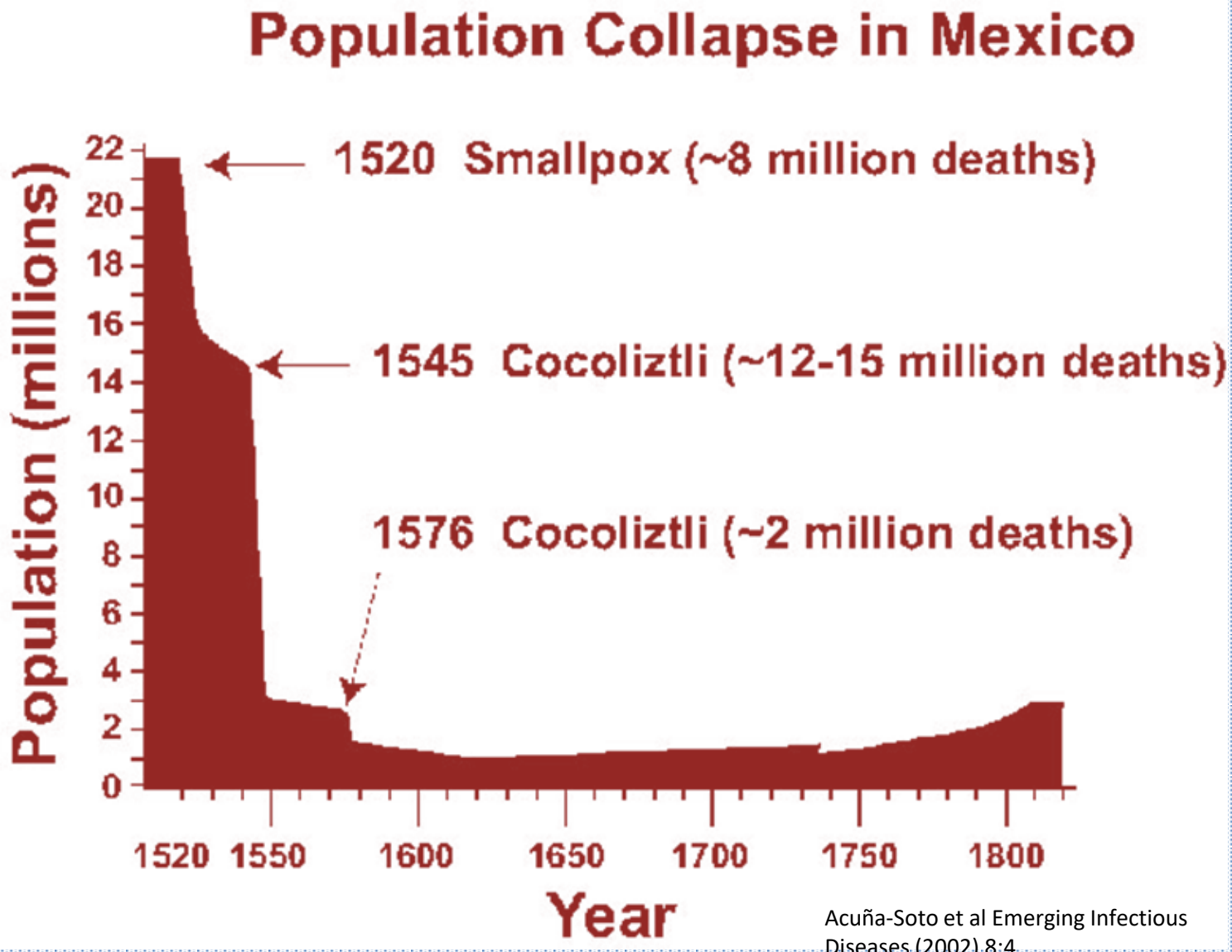
- In 1545, after the arrival of Spanish settlers in Mexico and Guatemala, several diseases spread among both natives and invaders.
- A total of 20M people died following a 1st outbreak in 1545 and a 2nd in 1576.
- A mysterious disease was highly fatal to the Aztecs and Mixtecs killing 15 M people (80% of their population) in less than 5 years.
- Locals called this mysterious disease *Huey cocoliztli* (grand pestilence) in nahuatl language.

# Cocoliztli

- At the start of the 16th Century MesoAmerican population was estimated around 22 million.
- The 1519 smallpox epidemic was probably caused by the troops of Hernán Cortés, who arrived from Santiago de Cuba.
- The epidemic spread rapidly betwen 1519 and 1520, killing about 5 to 8M in the region.

# Cocoliztli

- The 1519-1520 smallpox epidemic was not the only nor the most severe one of the 16th century.
- There were 2 epidemics, one in 1545-48 and another one in 1576-80, not due to smallpox.
- Some estimate that the 1st one killed 12-15M and the 2nd one killed 2M more (14-17M total), making it the greatest demographic catastrophe in the history of the region.




Acuña-Soto et al Emerging Infectious Diseases (2002) 8:4

# Cocoliztli

- Symptoms ranged from high fevers to bleeding from the mouth, eyes and nose.
- After 3 or 4 days of suffering, death followed.
- This disease is the 2nd deadliest in modern history, after the bubonic plague, which killed 25M people in Europe in the 14th Century.

# Cocoliztli

- At least 13 epidemics are attributed to *Cocoliztli*, with the largest occurring in 1520, 1545, 1576, 1736, and 1813.
- They usually occurred within 2 years of a major drought.
- The epidemic of 1576 occurred after a drought that stretched from Venezuela to Canada.
- When rains followed the drought, numbers of vesper mice, a carrier of viral hemorrhagic fever, increased.

# Cocoliztli

- Descriptions are similar to those of Old World diseases including measles, yellow fever and, typhus, but many researchers recognize it as a separate disease.

- Francisco Hernández de Toledo, a physician who witnessed the outbreak in 1576, and others described characteristic symptoms.

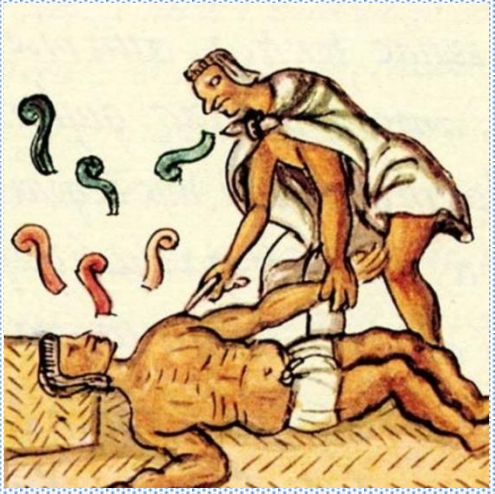
# Cocoliztli

1576 Characteristic Symptoms:

- High fever
- Severe headache
- Vertigo
- Black tongue
- Dark urine
- Head and neck nodules
- Neurological disorders

- Abdominal & chest pain
- Spotted skin
- Dysentery
- Jaundice
- GI hemorrhage
- Bloody diarrhea
- Bleeding from the eyes, mouth, nose and vagina

# Cocoliztli



- The onset was rapid and without any precursors that would suggest illness.
- The disease had an extremely high level of virulence, with death often occurring within a week of the first symptoms, or in as few as 3 or 4 days.
- Despite causing significant damage to bodily systems, *Cocoliztli,* like other diseases that work rapidly, usually do not leave lesions on the bones.

# Cocoliztli

- After more than 500 years the actual pathology has not been accurately identified.
- Recently, scientists ruled out other possible conditions, including smallpox, measles, mumps, and influenza.
- Using DNA samples extracted from teeth of 29 bodies of *cocolizlti* victims, researchers found that the Aztecs probably died from typhoid fever.

# Typhoid Fever

- Typhoid is an enteric fever associated with a bacteria called *Salmonella enterica, subset paratyphi C.*
- Nowadays, it scarcely infects humans, but it was deadly to the Aztecs, who had no defenses against diseases brought by Spanish conquerors.
- The bacteria spread through food and through the animals the Spanish had brought with them from Europe.
- Cases of *Salmonella enterica* had been reported in Western Europe in the 15th century.

# Cocoliztli

- Remains of *Salmonella enterica* were identified. In the teeth of corpses over 500 years old.
- The Yacundaa-Teposcolula burial ground is the only one for which there is historical evidence of Indians buried there due to *Cocoliztli*.
- This is the 1st time that this type of bacteria has been considered as the cause of an epidemic of this size.

Sweating Sickness

Ergotism

Dancing Madness

# OTHER EPIDEMICS

# SWEATING SICKNESS

# Sweating Sickness

- Also called English sweat, *sudor anglicus,* or just *"the sweats".*

- It was a mysterious and contagious disease that appeared in England as an epidemic on 5 occasions:
  - 1485
  - 1508
  - 1517
  - 1528
  - 1551.

# Sweating Sickness

- It was confined to England, except in 1528–1529, when it spread to the European continent.
- It first appeared in Hamburg, went northward to Scandinavia and eastward to Lithuania, Poland, and Russia.
- The Netherlands was also involved, but with the exception of Calais the disease did not spread to France or Italy.

# Sweating Sickness

- All the epidemics were severe, with a very high mortality rate, except for the 2nd outbreak (1508).
- Fully described by John Caius, a contemporary British physician who practiced in Shrewsbury.
- He described a 1551 outbreak in his book: *A Boke or Counseill Against the Disease Commonly Called the Sweate, or Sweatyng Sicknesse.*

# Sweating Sickness

- Illness began with rigors, headache, giddiness, and severe prostration.
- After 1 to 3 hours, violent, drenching **sweat** came on, accompanied by severe headache, delirium, and rapid pulse.
- No skin eruptions were noted by observers.
- Death might occur from 3 to 18 hours after the first onset of symptoms.

# Sweating Sickness

- If the patient survived for 24 hours, recovery was usually complete.
- Immunity was not conferred by an attack, and it was not unusual for patients to have several attacks.
- Each epidemic lasted for only a few weeks in any particular locality.

# Sweating Sickness

- Since 1578, 200 outbreaks of the Picardy sweat resembling the English sweat occurred in France between 1718 and 1918.
- Also called miliary fever or *suette des Picards.*
- Patients invariably had a rash lasting for about a week, and the mortality rate was lower.
- A commission investigated the 1906 outbreak of Picardy sweat which struck 6,000 people, and attributed it to infection from fleas of field mice.

# Sweating Sickness

- The malady struck especially the wealthy and the upper class: Dukes, bishops, and mayors, all fell victims to it.
- Monasteries were hit the hardest and fatalities among the clergies were high.
- Anne Boleyn, the wife of King Henry VIII, is said to have contracted and survived the disease.
- The mysterious death of Arthur Tudor, the eldest son of Henry VII of England, has also been attributed to sweating sickness.

# Hantavirus

- Hantaviruses *:*
  - *"*New World", in America: cause *hantavirus pulmonary syndrome* (HPS).
  - "Old World", in Europe and Asia: cause *hemorrhagic fever with renal syndrome* (HFRS).

- Each hantavirus serotype has a specific rodent host species.

- Aerosolized virus shed in urine, feces, and saliva, or a bite from an infected host spreads disease to people.

# Sweating Sickness

Hantavirus?

- Scholars suggest that the disease may have been caused by an unknown hantavirus that rodents carry.
- In humans, hantavirus causes a fatal pulmonary infection that induces flu-like symptoms like fever, cough, muscle pain, headache, and lethargy.
- Mortality rate is as high as 38 percent.

# Hantavirus

- Incidence of hantavirus outbreak in modern times is relatively rare.
- During the Korean War (1950–1953), the hemorrhagic fever that afflicted the troops was caused by a hantavirus infection.
- One out of every ten that fell ill, died.
- The virus's name comes from the Hantan River in South Korea.

# Hantavirus Pulmonary Syndrome (HPS)

- A rare, severe, sometimes fatal (38%) respiratory disease in humans caused by infection with hantaviruses.
- Anyone who comes into contact with rodents that carry hantaviruses is at risk of HPS.
- Rodent infestation in and around the home is the primary risk for hantavirus exposure.
- No cases of HPS have been reported in the US in which the virus was transmitted from one person to another.

# HPS Symptoms

## Main

- Fatigue
- Fever
- Muscle aches:
  - Large muscle groups
  - Thighs
  - Hips
  - Back
  - Shoulders (sometimes)

UNIVERSAL Symptoms

## Secondary

- Headaches
- Dizziness
- Chills
- Nausea and vomiting,
- Diarrhea
- Abdominal pain

50% have these symptoms.

# Hemorrhagic Fever with Renal Syndrome (HFRS)

- Early symptoms resemble HPS and usually develop in 2 to 4 weeks but can take up to 8 weeks to appear.

- These last for 1 to 7 days, but more serious symptoms can develop:
  - Shock
  - Low blood pressure
  - Vascular leakage
  - Fluid retention
  - Kidney failure
  - Low platelet count *(thrombocytopenia)*
  - *Excess* fluid body *(hypervolemia),* especially in pregnancy

- FRS can be fatal in up to 15% of people who contract it.

# Hantavirus

## In the US

- In the US, public health experts track cases of human hantavirus since the earliest formal diagnoses in 1993.
- As of the end of 2020, there have been 833 people with a hantavirus infection over 27 years.
- Almost 97% of the infections resulted in HPS.
- In 2020, there were 17 people with hantavirus, 1 was in NY, but the other 16 were in states west of the Mississippi River.

# Questions? 2

# ERGOTISM

Ergot on wheat

# Ergotism

- Toxic condition produced by eating grain, grain products, or grasses infected with alkaloids of the ergot fungus, or by chronic excessive use of an ergot drug.

- Typical symptoms:
  - Convulsive muscle contractions
  - Intense diarrhea
  - Severe muscle pain
  - Paresthesia,
  - Hallucinations
  - Delirium.
  - Amenorrea.

- In severe cases, tissue necrosis occurs.

# Ergotism

- Produced by the fungus *clavicepus purpurea* (the purple club-headed fungus,
- Two basic types:
  - Convulsive
  - Gangrenous
- There is evidence of ergot poisoning serving a ritual purpose in the ritual killing of certain bog bodies

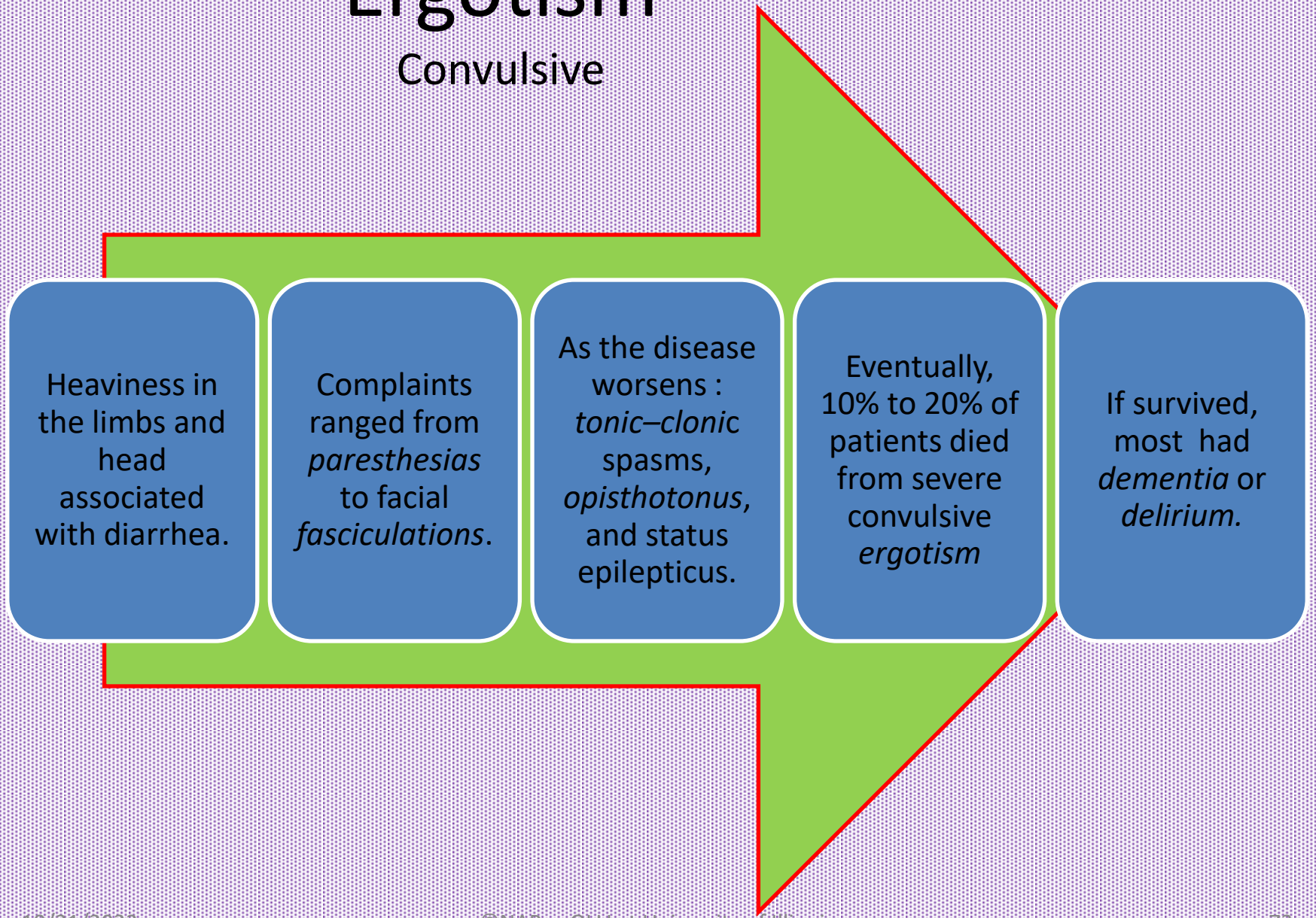
# Ergotism

*Clavicepus purpurea* on rye)

- When milled, the ergot is reduced to a red powder, obvious in lighter grasses but easy to miss in dark rye flour.
- In less wealthy countries, ergotism still occurs; an outbreak in Ethiopia occurred in mid-2001 from contaminated barley.
- If there is a combination of moist weather, cool temperatures, delayed harvest in lowland crops and rye consumption, an outbreak is possible.

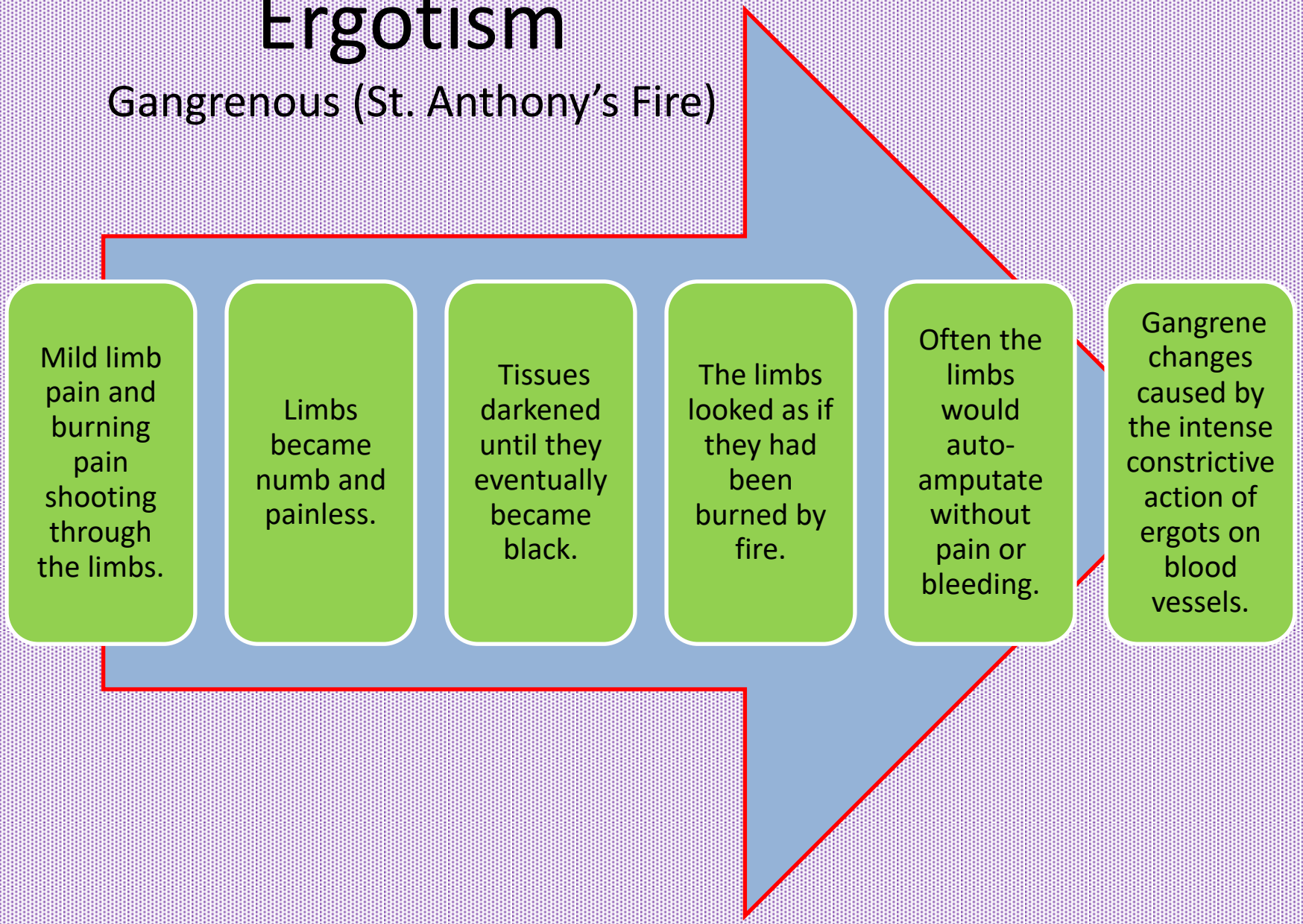
# Ergotism

## Convulsive



# Ergotism

## Gangrenous (St. Anthony's Fire)



# Isenheim Altarpiece

## Matthius Grunewald

Right panel shows St. Anthony the Great, patron saint of the victims of Saint Anthony's fire who remains placid even while being taunted by a frightening monster.

- Saint Anthony occupies the place of honor at the center of the corpus and at his side a pig is depicted, the emblem of the Antonite order.

# Ergotism

## Gangrenous

- The toxic ergoline derivatives are found in ergot-based drugs (such as methylergometrine, ergotamine or, previously, ergotoxine).
- Toxic effects occur with either high doses, or when moderate doses interact with potentiators such as erythromycin.
- The alkaloids can pass through lactation from mother to child, causing ergotism in infants.
- Ergotamine was the precursor to the potent hallucinogen Lysergic Acid Diethylamide (LSD).

# Ergotism

## Complications

- Numerous case reports of ischemic stroke, vascular complications, cardiac valvulopathy and limb ischemia from vasospasm in users of ergot or ergot-derived migraine medications.
- Prolonged kidney arterial vasospasm causes decreased kidney perfusion, leading to kidney injury.
- Prolonged ischemia can cause acute tubule- interstitial nephritis.
- In most case reports, resolution of kidney injury eventually occurs after withdrawal of ergotamine.

# Ergotism

Gangrenous

"St. Anthony's Fire" and "holy fire" were terms used in the Middle Ages to describe the blackened, burning, gangrenous limbs caused by ergotamine induced vasoconstriction and peripheral ischemia.

# Ergotism

## 1951 Outbreak

- On August 15th, at Pont-Saint-Esprit (France), an outbreak of poisoning marked by acute psychotic episodes and various physical symptoms ocurred.
- More than 250 people were affected, 50 persons were interned in asylums and four died.
- Most academics accept that the cause of the epidemic was naturally-occurring ergot poisoning in rye flour.
- A few theorize other causes such as poisoning by mercury, mycotoxins, or nitrogen trichloride.

# Ergotism

## Mercury

- Along with its antimicrobial properties, fungicidal properties for mercury were also discovered.
- Around 1914, it became a very effective product used to treat seed grains, germinating seeds, and seedlings and protect them from fungal infections.
- Wheat, rice, barley, oats, rye, beans, potatoes, peanuts, and flower bulbs were among seeds treated with methylmercury.

# Ergotism

## Mercury

- Mercuric chloride, at low concentrations (up to 0.1 %), is perhaps the most effective disinfecting agent for seeds with soil-borne or epiphytic fungi.

- Mass-poisonings due to consumption of seeds treated with mercury compounds are often misidentified as *ergotism*.

- Mercury compounds to treat grain were banned in US and most of the world in 1970.

St. Vitus' Dance
St. John's Day Dance
The Dancing Mania
Tarantism
Tegretier

Pieter Bruegel the elder 1607

# THE DANCING MADNESSES

# St. Vitus' Dance
## (Sydenham's Chorea)

- Victims would start dancing, and not stop, except for brief periods of fitful sleep and modest nourishment, until complete exhaustion set in, or death.

- In 1347, several towns along the Rhine and Moselle were afflicted with epidemics, but the big one was in Strasbourg in 1518, with hundreds afflicted, and possibly 15 deaths/day. [1]

- Frau Troffea, started the epidemic when she began dancing on 14 July and did so for 10 days, her shoes soaked with blood, until she was sent to a shrine dedicated to Saint Vitus.

1. J Waller 2009

# St Vitus' Dance

- This phenomenon was enabled by:
  - Susceptibility of humans to legends of the power of demons & saints .
  - The colorful and influential rhetoric of the Church.
  - The horrible time everyone except the wealthy were having.

- A legend of the 14th and 15th centuries, was that St. Vitus had prayed to God just before he was decapitated that he might protect from the Dancing Mania all those who celebrated his day and fast on its eve.

- The legend then says that a voice from heaven was heard:

"Vitus, thy prayer is accepted."

# The Dancing Mania

- In the 14th century after the Black Death, recurred for centuries in central Europe , Germany, Belgium, and the Netherlands, abating in the early 17th century.
- “Dancing mania" was derived from "*choreomania,":* from *choros* (dance) and *mania* (madness).
- A punishment from God, because some villagers had danced in a graveyard, and were then condemned to dance until almost dead.

# The Dancing Mania

- In the 15th Century it was thought to be:
  - A corruption of the festival of St. John's Day by ancient pagan customs
  - An ordeal sent by a saint, or a punishment from God for people's sins.

- During outbreaks in the 14th and 15th centuries, magistrates and priests, not physicians dealt with it, even though the disorder wasn't treatable by decrees, prayers or exorcisms.

- In the 16th century, Paracelsus dismissed the idea that saints cured the dancing mania and suggested a psychogenic etiology, which brought it within the purview of physicians.

# The Dancing Mania

Later authors suggested that the dancing mania was:

- A mass stress-induced psychosis
- A mass psychogenic illness
- A culturally determined form of ritualized behavior
- A manifestation of religious ecstasy
- A type of indolent malingering
- The result of food poisoning caused by toxic ergot fungi
- A divine curse

In reality, dancing manias did not have a single cause, but maybe many components from the above list.

# The Dancing Mania

- A variant, Tarantism, prevalent in southern Italy from the 15th to the 17th centuries, was blamed on bites from the tarantula spider.
- Affected individuals participated in continuous, prolonged, erratic, often frenzied and sometimes erotic, dancing.
- Only music provided any relief for tarantism.

# TARANTISM

Lycosa tarantula

# Tarantism

- First appeared in Apulia, then spread over the other provinces of Italy, and during the 15th and 17th centuries, it prevailed as a great epidemic.
- An extreme urge to dance, thought to have been caused by the bite of a spider (*Lycosa tarantula*), prevalent in southern Italy.
- In the present times, it has lost its importance, like the St. Vitus's dance and other manic dances.

# Tarantism

- Form of hysteric behavior popularly believed to result from the bite of the wolf spider.
- A better candidate is the Mediterranean black widow (*Latrodectus tredecimguttatus)*, although no link between its bites and tarantism has ever been demonstrated.
- The dancing mania most likely had little to do with spider bites, but the *Tarantella* dance supposedly evolved from a therapy for *tarantism*.

# Tarantism

- Most common in the Italian province of Taranto.
- Francesco Cancellieri, Italian writer from the 18th century, wrote that “sweat and antidotes relieve the sick, but the only real cure to Tarantism is music and dance”.
- The common belief at the time was that the act of dancing would keep the afflicted patients alive.

# Tarantism

- This dance “therapy” evolved into a popular style of dance in southern Italy called the Tarantella.
- Schadewaldt, a medical historian, studied an outbreak of Tarantism in Apulia, Italy, in 1971.
- He said the music of the dance has “strange monotonous melodies accompanied by clapping of the hands or stamping of the feet, always ending in a crescendo.”

# Tarantism

- “We found the poor peasant oppressed with difficult breathing, and we observed also that the face and hands had started to become black,

- And because his illness was known to all, a guitar was brought, whose harmony immediately that he heard it, he began first moving the feet, legs shortly afterwards, then stood on his knees, and then he arose swaying.

- Finally, in the space of a quarter of an hour he was leaping, nearly three palms from the ground.

- Before an hour, the black was gone from his hands and face, and he regained his native color.”

F Cancellieri 1817

# Tarantella


# Tarantism

- Tarantism is consistent with mass psychogenic illness.
- The popular belief that tarantism results from a spider bite remains scientifically unsubstantiated.
- The actual cause or causes of tarantism remain unknown.
- J. Crompton thinks that ancient Bacchanalian dance rites that had been forbidden by Rome in 186 BC went underground, and later reappeared as emergency therapy for bite victims.

# TIGRETIER

# Tigretier

- Mainly in the Tigre (Tigray) region of Abyssinia, resembles the mania of the St. John's dancers, with similar ecstasy and the same violent effect on the nerves and muscles.
- In Ethiopian language it is called *Astaragaza*.
- More common among women than among men.
- “It seizes the body with a violent fever, that then turns to a lingering sickness, reducing the patients to skeletons, and often kills them if the family cannot procure the proper remedy.”

# Tigretier

Proper treatment to be financed by friends and relatives:

- 1st remedy: procure the assistance of a learned *Dofter*, who reads the Gospel of St. John, and drenches the patient with cold water daily for seven days (very often fatal).
- 2nd remedy: hire a band and purchase liquor. All the young men and women of the place assemble at the patient's house to dance and drink, and the patient has to dance without rest until exhausted.
- Final phase for both remedies: patient is to go dance in the public square without rest until normal again.

# Tigretier

- Now uncommon in Abysinia, but still pervasive in small pockets of the Tigre (Tigray) region.
- Several outbreaks on 18th and 19th centuries.
- No statistics available.
- Many possible causes but no clear single one.

# Final Questions?


THANK
YOU