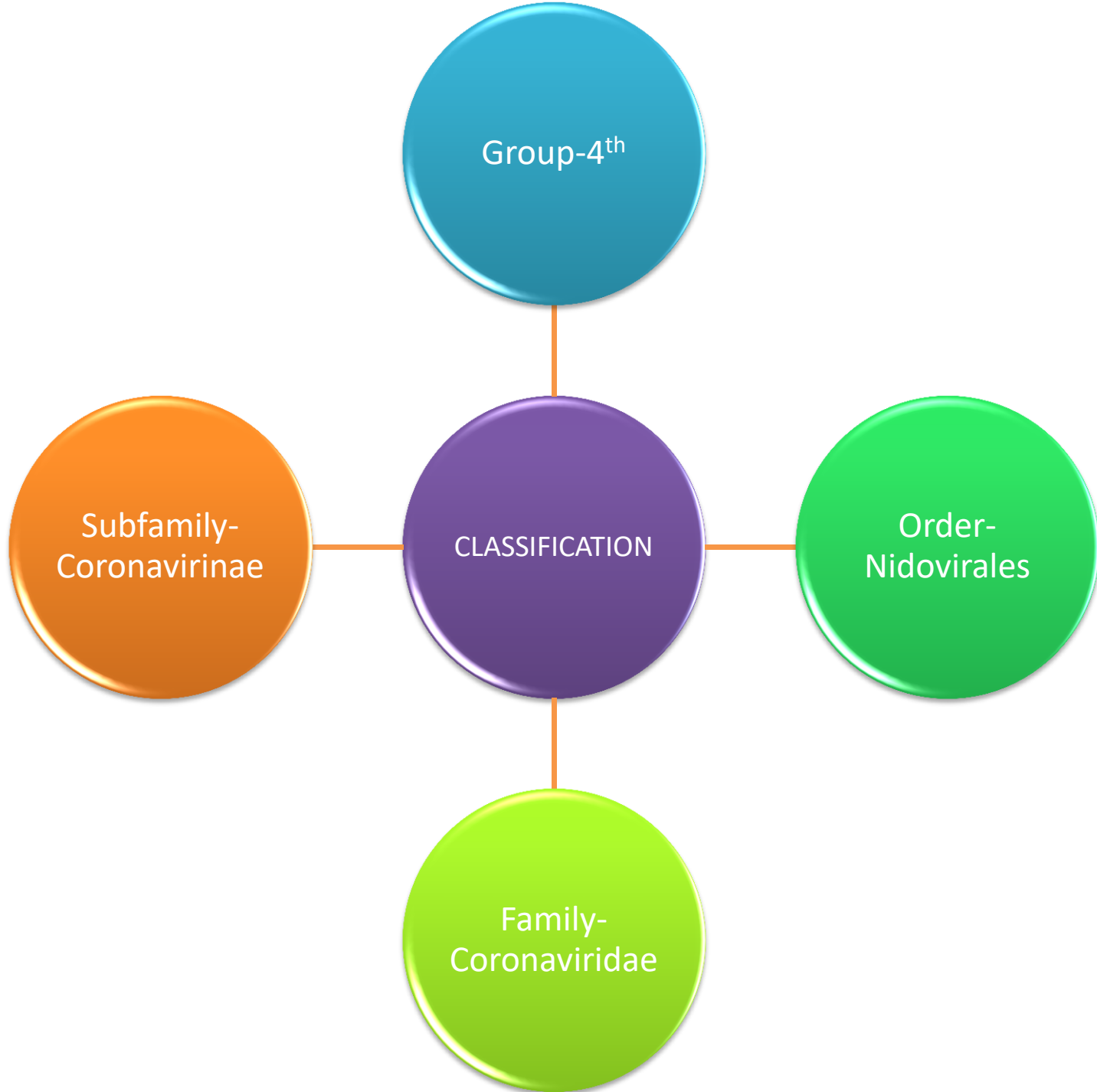
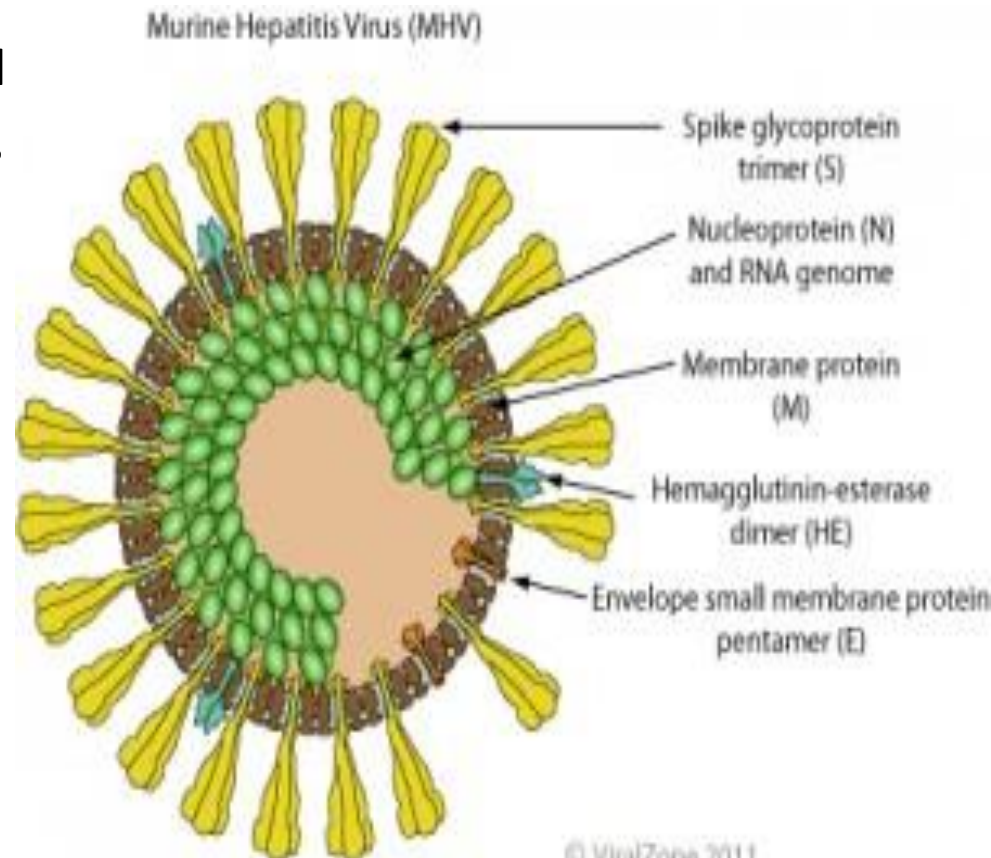


**CORONAVIRUS**



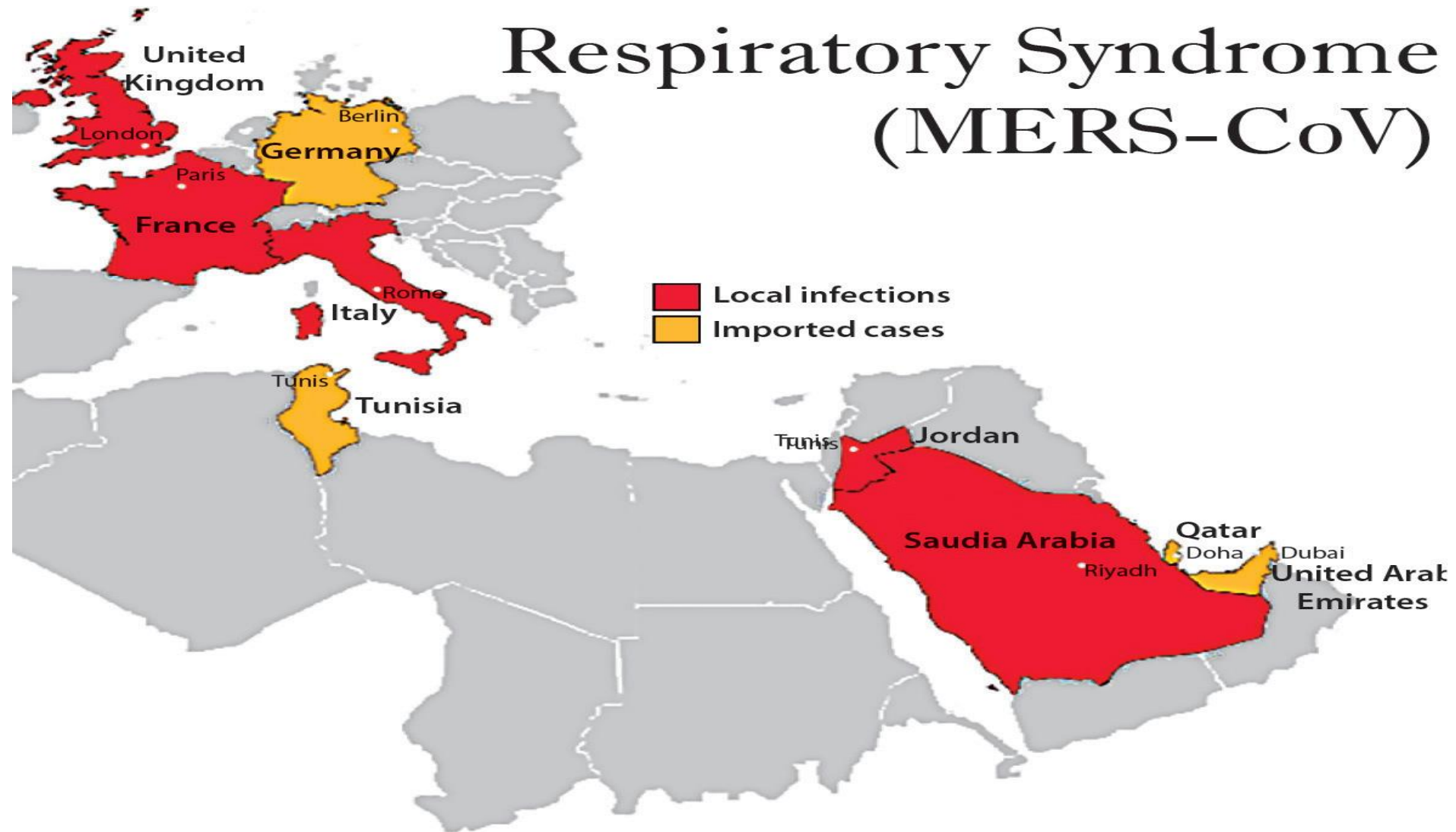
# MORPHOLOGY CHARACTERS

- Enveloped viruses with +ve sense RNA
- Nucleocapsid of helical symmetry
- Genomic size of corona viruses ranges from 26 to 32 kilobases
- Some coronaviruses also have a shorter spike – like protein called hemagglutinin esterase (HE)
- Coronaviruses were first described
- In the 1960 from the nasal cavities
- Of patients with the common cold



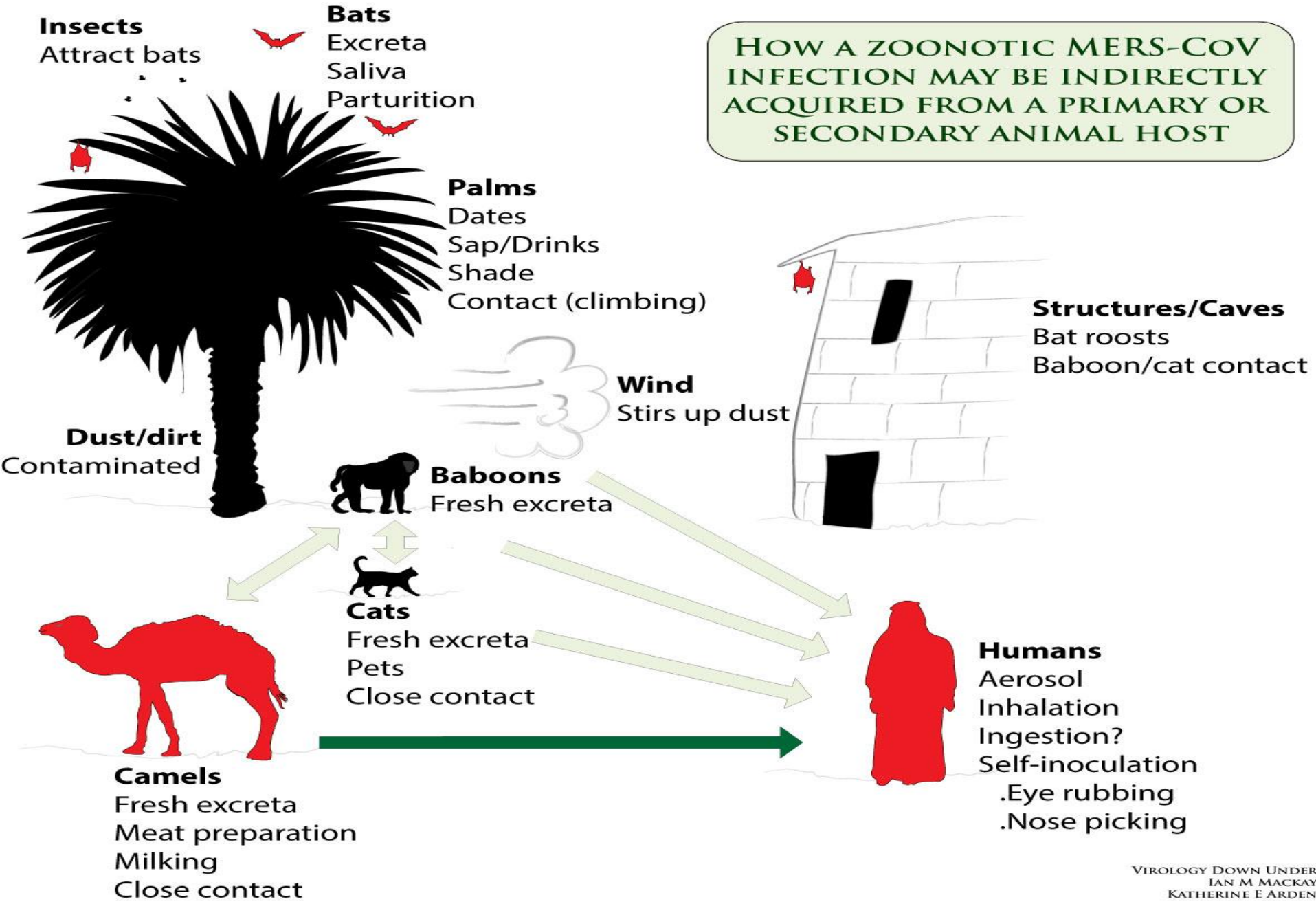
# epidemiology

## Middle Eastern Respiratory Syndrome (MERS-CoV)



# transmission

HOW A ZOONOTIC MERS-COV INFECTION MAY BE INDIRECTLY ACQUIRED FROM A PRIMARY OR SECONDARY ANIMAL HOST



# LISTING OF HUMAN CORONAVIRUS

## 1. Human Coronavirus

- 229E
- OC43
- SARS-CoV

## 2. Middle East respiratory syndrome Coronavirus

## 3. Human Coronavirus

- NL63
- HKU1

# CORONAVIRUS INFECTION IN HUMAN

## SARS

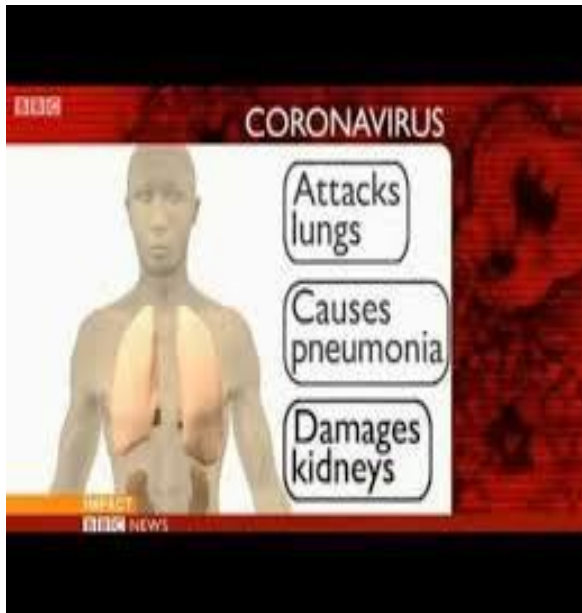
Coronaviruses causes colds in humans in the winter and early spring seasons.

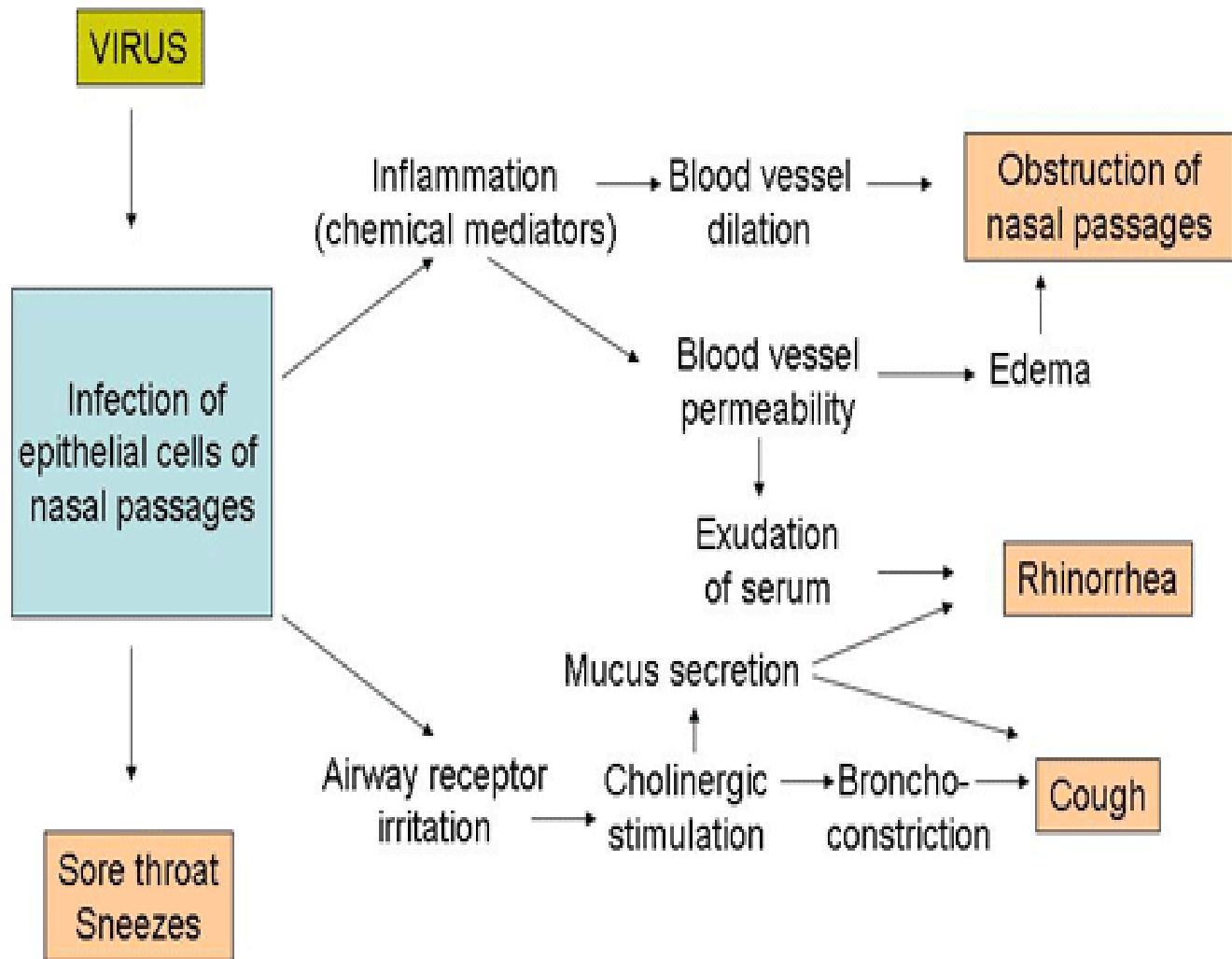
Upper and lower respiratory tract infection



Gastroenteritis

'Common colds' in human adults.

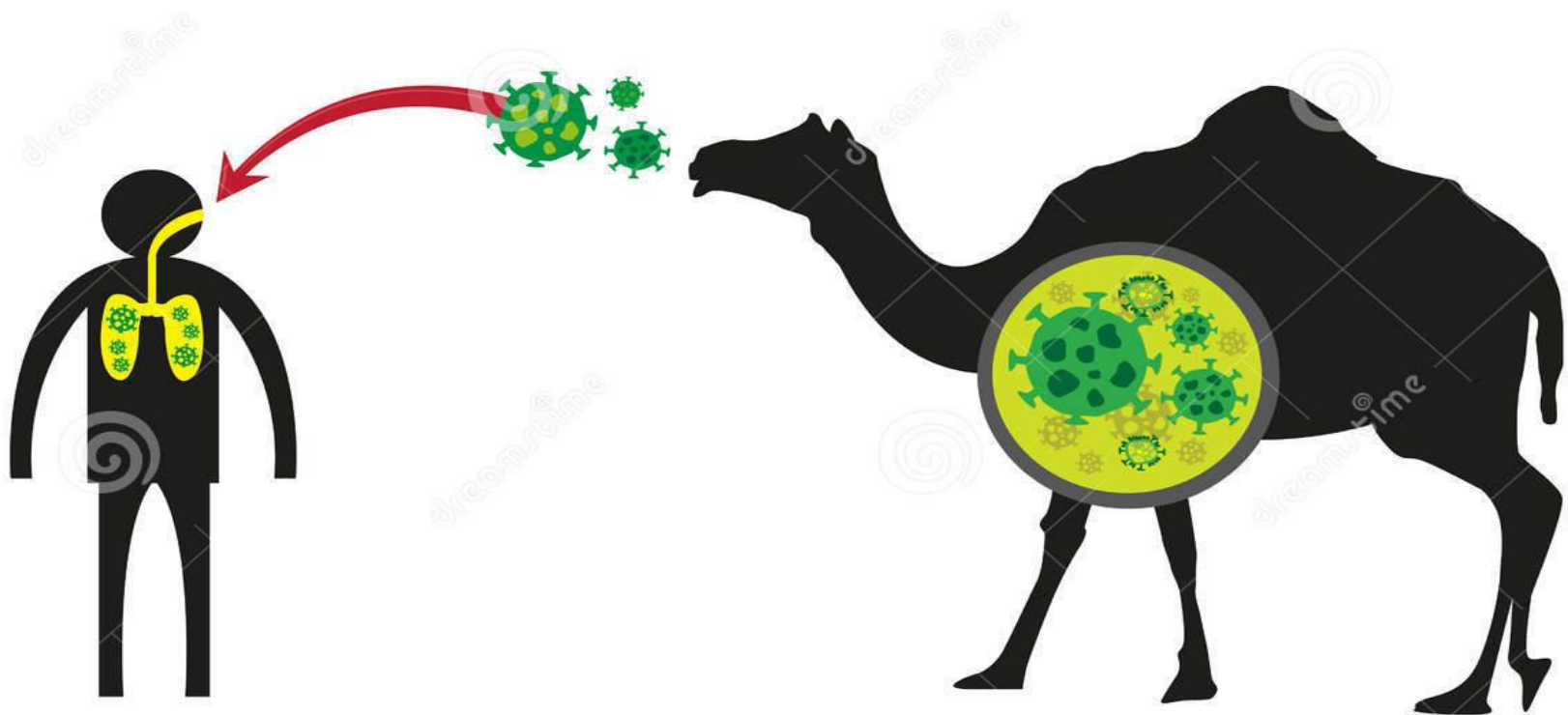






## MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS(MERS-CoV)

- The virus appears to have originated in bats.
- These viruses have infected camels for at least 20 years.



# MERS-COV

Middle East Respiratory Syndrome



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## AT A GLANCE

- > **Mers-CoV positive** calves are healthy and only a few display nasal discharge which also disappears in 7 days
- > **It is still a mystery** where the calves get the virus from
- > **Study shows the** virus is not shed through urine or faeces
- > **97 per cent cases** are healthcare associated and only 3 per cent probably acquired from dromedaries
- > **The danger of Mers-CoV** transmission from dromedary to humans is low because:
  - Only a few calves excrete the virus (for 1 week) through nasal or ocular discharge
  - Dromedary calves are 'wild' and have some or very little contact with people
- > **Danger of transmission** to humans may arise when calves are handled without wearing protective equipment.

## PREVENTIVE MEASURES

1



### PREVENTIVE MEASURES FOR UMRAH

- If you have a chronic disease (e.g. chronic lung disease, renal failure or diabetes) consult your physician before travelling for umrah
- Wash your hands regularly with soap and water and maintain good personal hygiene
- If you have fever (38°C and higher), cough or difficulty in breathing during umrah contact your nearest health worker
- If you develop fever or severe cough within two weeks of returning from umrah contact your nearest health worker



6

Cover your mouth with a disposable tissue when coughing or sneezing. If a tissue is not available, cough or sneeze into your upper sleeve

2



Avoid close contact with people who have been diagnosed with Mers-CoV

Avoid close contact with camels especially if you have a chronic disease, such as diabetes or lung disease, or a disease that affects your immune system

4



If you have fever (38°C and higher), cough, or difficulty in breathing, contact your nearest health worker

3

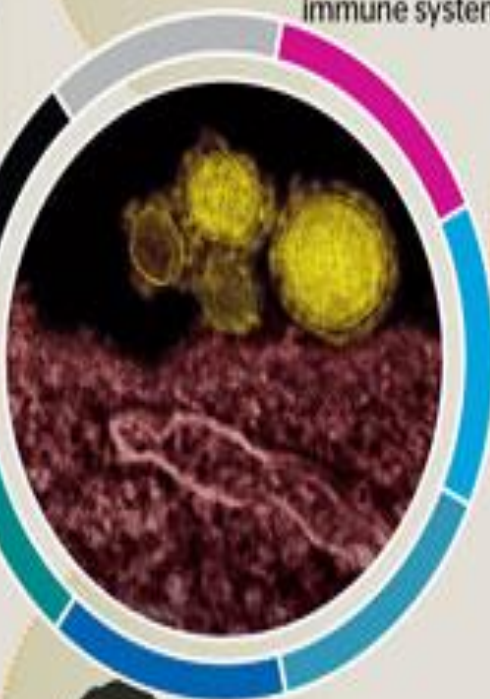


Do not drink unpasteurised camel milk or eat raw camel meat

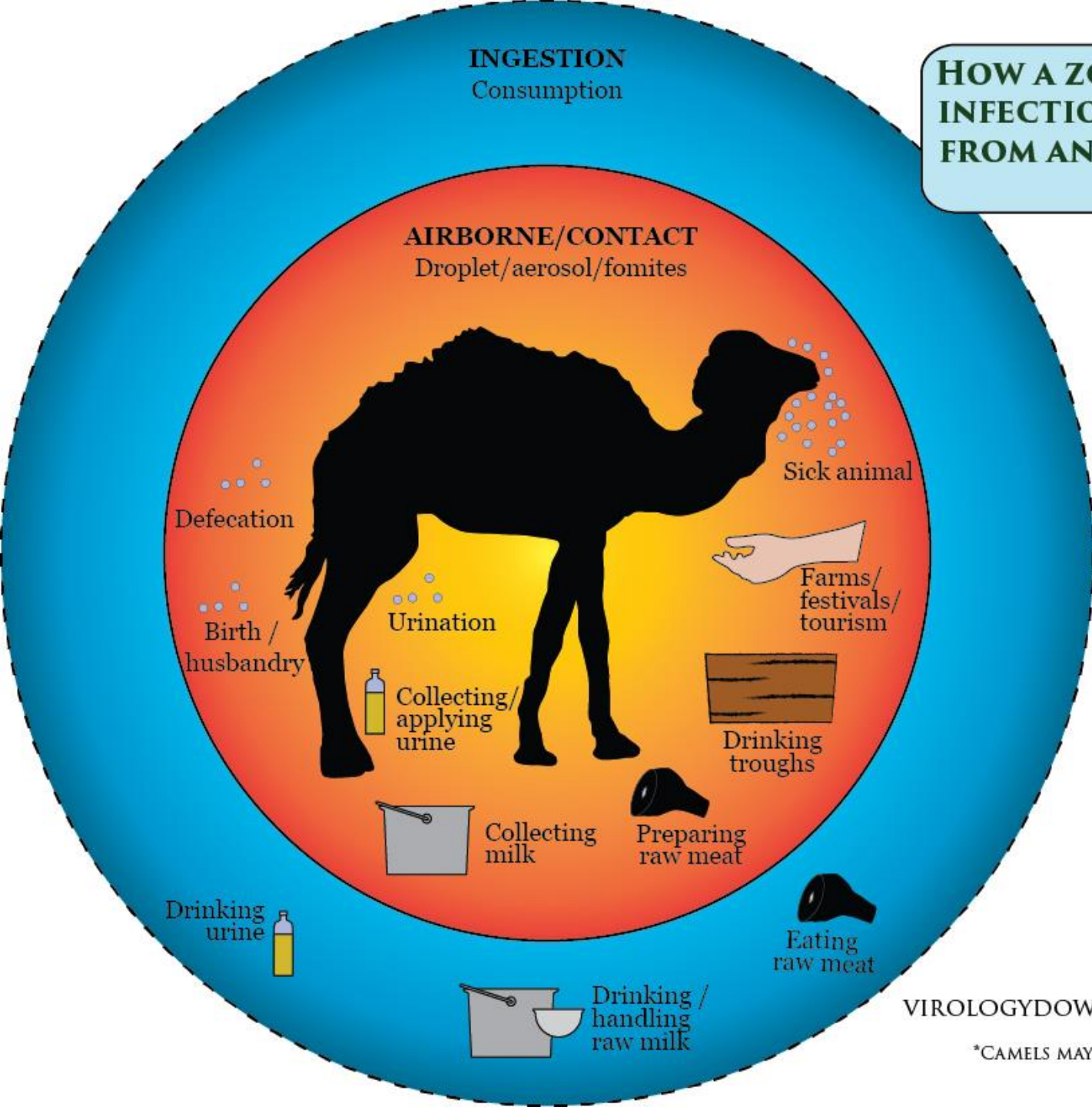
5



Wash your hands regularly with soap and water and maintain good personal hygiene



**HOW A ZONOTIC MERS-COV INFECTION MAY BE ACQUIRED FROM AN ACTIVELY INFECTED\* CAMEL**



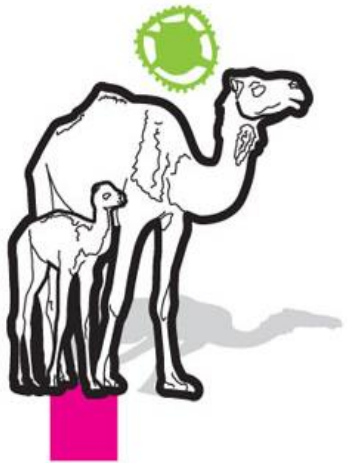
VIROLOGYDOWNUNDER.BLOGSPOT.COM.AU

IAN M MACKAY

\*CAMELS MAY ONLY BE INFECTED FOR A SHORT TIME

VI.1 18.05.14

# THE PATH OF MERS



## Camels

Dromedaries in the Middle East and Africa were found to have antibodies to the strains recovered from humans. No live virus has been isolated from camels yet.

**PATIENT 1**  
(Tested positive for MERS; now recovered)

**TRAVELED FROM RIYADH to LONDON to CHICAGO to MUNSTER, IND.**

**PATIENT 2**  
(Tested positive for MERS; now recovered)

**TRAVELED FROM JIDDA, SAUDI ARABIA, to LONDON to BOSTON to ATLANTA to ORLANDO**

**PATIENT 3**  
(Had MERS antibodies; never sick)

**HAD TWO FACE-TO-FACE MEETINGS IN ILLINOIS WITH PATIENT 1**



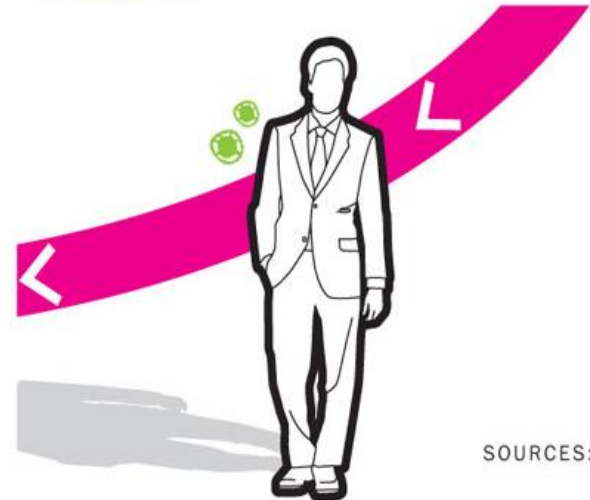
## Bats

MERS virus strains that matched those in humans have been found in bats near the first MERS patient's home in Saudi Arabia.



## Humans

It's not clear how the virus jumped from animals to people. Most cases of human-to-human spread have occurred among family members or in hospitals.





# MERS-CoV

[ Middle East Respiratory Syndrome - Coronavirus ]



High Fever  $\geq 38^{\circ}$



Pneumonia



Cough



Vomiting



Shortness of breath



Diarrhea



Severe Pneumonia



Renal Failure



After come back from foreign country if have high fever  
and cough please contact with Health Care Providers



NO VACCINE



NO MEDICINE



**WEAR FACE MASK  
IN THE HEAVILY  
CROWDED AREAS**



**WHEN COUGHING OR  
SNEEZING, USE TISSUE TO  
COVER MOUTH AND NOSE**



**FREQUENTLY  
WASH HANDS  
WITH SOAP**



**AVOID DIRECT HAND  
CONTACT WITH EYES,  
NOSE AND MOUTH**



**AVOID  
SHAKING HANDS  
AND HUGGING**



**AVOID CLOSE CONTACT  
WITH SICK PEOPLE  
AND THEIR TOOLS**



**AVOID CONTACT WITH  
THE LIVE ANIMALS**



**AVOID UNDER COOKING  
MEATS, EGGS, RAW FRUITS**



**DO NOT SHARE EATING  
UTENSILS, CUPS, TOWELS**

# CANINE CORONAVIRUS

Highly contagious intestinal disease worldwide in dog.



It was discovered in 1971 in Germany during an outbreak in Sentry dogs.





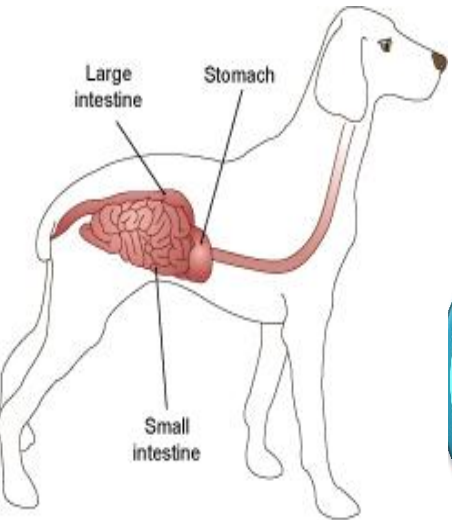


Virus invades



Causes diarrhoea

Replicates in villi of small intestine

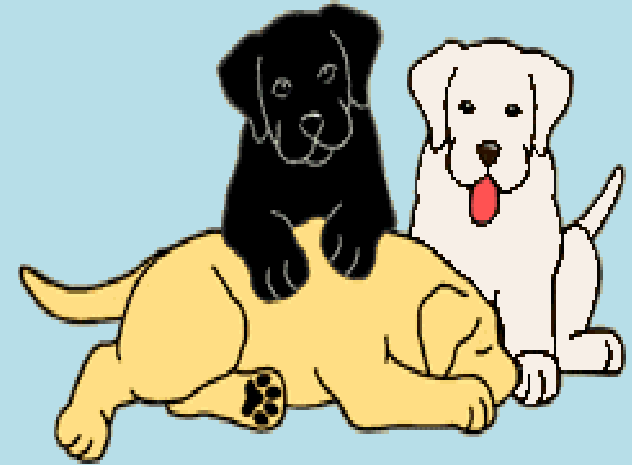


Causes gastrointestinal

Virus causes apoptosis

# SYMPTOMES

- Incubation period- 1to3 days
- Highly contagious disease and is spread through the feces of infected dogs
- Anorexia
- Vomiting
- Diarrhoea
- Dehydration



- 2<sup>nd</sup> type of canine coronavirus has been show causes respiratory disease in dog.



# BOVINE CORONAVIRUS

Infection causes  
'Calf enteritis'

'Enzootic  
pneumonia  
complex' in  
calves.

It can also cause  
'winter  
dysentery'

Diarrhoea

Drop in milk  
yield in adult  
cattle.



Calf scours (neonatal calf diarrhea) is a common disease affecting newborn

*Photo by J.W. Schroeder*



Infection normally occurs in calves between the ages of one week to three months.

Gastrointestinal

Dehydration

Depression

Reduced weight gain

Anorexia



Respiratory infection in the calf produced a serous to purulent nasal discharge