COVID-19

In [2]:
```python
from bs4 import BeautifulSoup
from urllib.request import urlopen
```

In [3]:
```python
def get_only_text(url):
    page = urlopen(url)
    soup = BeautifulSoup(page)
    text = ''.join(map(lambda p: p.text, soup.find_all('c')))
    print(text)
    return soup.title.text,text
```

In [4]:
```python
url = 'https://en.wikipedia.org/wiki/Coronavirus_disease_2019'
```

In [5]:
```python
text = get_only_text(url)
```

```
Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respirato
ry syndrome coronavirus 2 (SARS-CoV-2).[9] The disease was first identified in 2019 in Wuhan,
China, and has since spread globally, resulting in the 2019–20 coronavirus pandemic.[10][11]
Common symptoms include fever, cough, and shortness of breath. Muscle pain, sputum production
and sore throat are less common.[5][12] While the majority of cases result in mild symptoms,
[13] some progress to severe pneumonia and multi-organ failure.[10][14] As of 20 March 2020,
the rate of deaths per number of diagnosed cases is 4.1%; however, it ranges from 0.2% to 15%
depending on age and other health problems.[15]
The virus is typically spread from one person to another via respiratory droplets produced du
ring coughing.[16][17] It may also be spread from touching contaminated surfaces and then tou
ching one's face.[16] Time from exposure to onset of symptoms is generally between 2 and 14 d
ays, with an average of 5 days.[18][19] The standard method of diagnosis is by reverse transc
ription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. The infection can als
o be diagnosed from a combination of symptoms, risk factors and a chest CT scan showing featu
res of pneumonia.[20][21]
Recommended measures to prevent infection include frequent hand washing, social distancing (m
aintaining distance from others), and keeping hands away from the face.[22] The use of masks
is recommended for those who suspect they have the virus and their caregivers, but not the ge
neral public.[23][24] There is no vaccine or specific antiviral treatment for COVID-19. Manag
ement involves treatment of symptoms, supportive care, isolation, and experimental measures.
[25]
The World Health Organization (WHO) declared the 2019–20 coronavirus outbreak a pandemic[11]
and a Public Health Emergency of International Concern (PHEIC).[26][27] Evidence of local tra
nsmission of the disease has been found in many countries across all six WHO regions.[28]
Although those infected with the virus may be asymptomatic, many develop flu-like symptoms in
cluding fever, cough, and shortness of breath.[5][30][31] Emergency symptoms including diffic
ulty breathing, persistent chest pain or pressure, confusion, difficulty waking, and bluish f
ace or lips; immediate medical attention is advised if these symptoms are present.[32] Less c
ommonly, upper respiratory symptoms such as sneezing, runny nose, or sore throat may be seen.
Symptoms such as nausea, vomiting, and diarrhoea are seen in a minority of cases,[33] and som
e of the initial cases in China presented with only chest tightness and palpitations.[34] In
some, the disease may progress to pneumonia, multi-organ failure, and death.[10][14]
As is common with infections, there is a delay from when a person is infected with the virus
to when they develop symptoms, known as the incubation period. The incubation period for COVI
D-19 is typically five to six days but may range from two to fourteen days.[35][36]
The disease is caused by the virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-
2), previously referred to as the 2019 novel coronavirus (2019-nCoV).[37] It is primarily spr
ead between people via respiratory droplets from coughs and sneezes.[17] The virus can remain
viable for up to three days on plastic and stainless steel, and for three hours in aerosols .
[38] The virus has also been found in faeces, but as of March 2020 it is unknown whether tran
smission through faeces is possible, and the risk is expected to be low.[39]
The lungs are the organs most affected by COVID-19 because the virus accesses host cells via
the enzyme ACE2, which is most abundant in the type II alveolar cells of the lungs. The virus
uses a special surface glycoprotein, called "spike"(peplomer)to connect to ACE2 and enter the
host cell.[40] The density of ACE2 in each tissue correlates with the severity of the disease
in that tissue and some have suggested that decreasing ACE2 activity might be protective,[41]
[42] though another view is that increasing ACE2 using Angiotensin II receptor blocker medica
tions could be protective and that these hypotheses need to be tested.[43] As the alveolar di
sease progresses, respiratory failure might develop and death may follow.[42]
The virus is thought to be natural and have an animal origin,[44][45] through spillover infec
tion.[46] It was first transmitted to humans in Wuhan, China, in November or December 2019, a
nd the primary source of infection became human-to-human transmission by early January 2020.
[47][48] The earliest known infection occurred on 17 November 2019 in Wuhan, China,[49] altho
ugh doctors in Lombardy, Italy have uncovered early (anecdotal) cases apparently coterminous
with the outbreak in China.[50]

Microscopy image showing SARS-CoV-2. The spikes on the outer edge of the virus particles rese
mble a crown, giving the disease its characteristic name.
Schematic diagram of the Coronavirus particle. S, spike protein; M, membrane protein, E, enve
lope protein; N, nucleocapsid protein; ; structural proteins of coronavirusCoronavirus virion
structure.
The WHO has published several testing protocols for the disease.[52] The standard method of t
esting is real-time reverse transcription polymerase chain reaction (rRT-PCR).[53] The test c
an be done on respiratory samples obtained by various methods, including a nasopharyngeal swa
b or sputum sample.[54] Results are generally available within a few hours to two days.[55][5
6] Blood tests can be used, but these require two blood samples taken two weeks apart and the
results have little immediate value.[57] Chinese scientists were able to isolate a strain of
the coronavirus and publish the genetic sequence so that laboratories across the world could
independently develop polymerase chain reaction (PCR) tests to detect infection by the virus.
[10][58][59] As of 26 February 2020, there were no antibody tests or point-of-care tests thou
gh efforts to develop them are ongoing.[60]
Diagnostic guidelines released by Zhongnan Hospital of Wuhan University suggested methods for
detecting infections based upon clinical features and epidemiological risk. These involved id
entifying people who had at least two of the following symptoms in addition to a history of t
ravel to Wuhan or contact with other infected people: fever, imaging features of pneumonia, n
ormal or reduced white blood cell count, or reduced lymphocyte count.[20] A study published b
y a team at the Tongji Hospital in Wuhan on 26 February 2020 showed that a chest CT scan for
COVID-19 has greater sensitivity (98%) than the polymerase chain reaction (71%).[21] False ne
gative results may occur due to PCR kit failure, or due to either issues with the sample or i
ssues performing the test. False positive results are likely to be rare.[61]
One study in China found that CT scans showed ground-glass opacities in 56%, but 18% had no r
adiological findings.[62] Bilateral and peripheral ground glass opacities are the most typica
l CT findings, though they are non-specific.[63] Consolidation, linear opacities and reverse
halo sign are other radiological findings.[63] Initially, the lesions are confined to one lun
g, but as the disease progresses, indications manifest in both lungs in 88% of so-called "lat
e patients" in the study group (the subset for whom time between onset of symptoms and chest
CT was 6–12 days).[63] Ground glass opacities are also a common feature in children's diseas
e.[64]
Typical CT imaging findings
CT imaging of rapid progression stage
Because a vaccine against SARS-CoV-2 is not expected to become available until 2021 at the ea
rliest,[70] a key part of managing the COVID-19 pandemic is trying to decrease the epidemic p
eak, known as flattening the epidemic curve through various measures seeking to reduce the ra
te of new infections.[66] Slowing the infection rate helps decrease the risk of health servic
es being overwhelmed, allowing for better treatment of current cases, and provides more time
for a vaccine and treatment to be developed.[66]
Preventive measures to reduce the chances of infection in locations with an outbreak of the d
isease are similar to those published for other coronaviruses: stay home, avoid travel and pu
blic activities, wash hands with soap and warm water often and for at least 20 seconds (prope
r hand hygiene and also the time it takes to sing "Happy Birthday to You" twice.), practice g
ood respiratory hygiene and avoid touching the eyes, nose, or mouth with unwashed hands.[71]
[72][73] The CDC recommends covering up the mouth and nose with a tissue during any cough or
sneeze and coughing or sneezing into the inside of the elbow if no tissue is available.[71] T
hey also recommend proper hand hygiene after any cough or sneeze.[71] Social distancing strat
egies aim to reduce contact of infected persons with large groups by closing schools and work
places, restricting travel, and canceling mass gatherings.[74] Social distancing also include
s that people stay 6 feet apart[75] (about 1.80 meters), roughly the length of a full size be
d/mattress.[76]
According to the WHO, the use of masks is only recommended if a person is coughing or sneezin
g or when one is taking care of someone with a suspected infection.[77]
To prevent transmission of the virus, the CDC recommends that infected individuals stay home
except to get medical care, call ahead before visiting a healthcare provider, wear a face mas
k when exposed to an individual or location of a suspected infection, cover coughs and sneeze
s with a tissue, regularly wash hands with soap and water and avoid sharing personal househol
d items.[78][79] The CDC also recommends that individuals wash hands often with soap and wate
r for at least 20 seconds, especially after going to the toilet or when hands are visibly dir
ty, before eating and after blowing one's nose, coughing, or sneezing. It further recommended
using an alcohol-based hand sanitizer with at least 60% alcohol, but only when soap and water
are not readily available.[71] For remote areas where commercial hand sanitizers are not read
ily available, WHO suggested two formulations for the local production. In both of these form
ulations the antimicrobial activity of ethanol or isopropanol is enhanced by low concentratio
n of hydrogen peroxide while glycerol acts as a humectant.[80] The WHO advises individuals to
avoid touching the eyes, nose, or mouth with unwashed hands.[72] Spitting in public places al
so should be avoided.[81]
People are managed with supportive care which may include fluid, oxygen support, and supporti
ng other affected vital organs.[83][84][85] Steroids such as methylprednisolone are not recom
mended unless the disease is complicated by acute respiratory distress syndrome.[86][87]
CDC recommends that those who suspect they carry the virus wear a simple face mask.[23] Extra
corporeal membrane oxygenation (ECMO) has been used to address the issue of respiratory failu
re, but its benefits are still under consideration.[62][88] While WHO does not oppose the use
of non-steroidal anti-inflammatory drugs such as ibuprofen for symptoms,[89] some recommend p
aracetamol (acetaminophen) for first-line use.[90] Well theoretical concerns have been raised
about ACE inhibitors, as of March 19,2020 these are not sufficient to justify stopping these
medications.[91]
The WHO and Chinese National Health Commission have published recommendations for taking care
of people who are hospitalised with COVID-19.[92][93] Intensivists and pulmonologists in the
US have compiled treatment recommendations from various agencies into a free resource, the IB
CC.[94][95]
Management of people infected by the virus includes taking precautions while applying therape
utic manoeuvres, especially when performing procedures like intubation or hand ventilation th
at can generate aerosols.[96]
CDC outlines the specific personal protective equipment and the order in which healthcare pro
viders should put it on when dealing with someone who may have COVID-19: 1) gown, 2) mask or
respirator,[97][98] 3) goggles or a face shield, 4) medical gloves.[99][100]
Most cases of COVID-19 are not severe enough to require mechanical ventilation (artificial as
sistance to support breathing), but a percentage of cases do.[101][102] This is most common i
n older adults (those older than 60 years and especially those older than 80 years). Many dev
eloped countries do not have enough hospital beds per capita, which limits a health system's
capacity to handle a sudden spike in the number of COVID-19 cases severe enough to require ho
spitalization.[103] This limited capacity is a significant driver of the need to flatten the
curve (to keep the speed at which new cases occur and thus the number of people sick at one p
oint in time lower).[103] One study in China found 5% were admitted to intensive care units,
2.3% needed mechanical support of ventilation, and 1.4% died.[62] An Italian startup employed
3D printing technology to produce valves for life-saving coronavirus treatment due to a broke
n supply chain of original manufacturing.[104] 3D printed valves cost $1 instead of $11,000 a
nd were ready overnight.[105]
No medications are approved to treat the disease by the WHO although some are recommended by
individual national medical authorities.[106] Research into potential treatments started in J
anuary 2020,[107] and several antiviral drugs are in clinical trials.[108][109] Although new
medications may take until 2021 to develop,[110] several of the medications being tested are
already approved for other uses, or are already in advanced testing.[106]
Antiviral medication may be tried in people with severe disease.[83] The WHO recommended volu
nteers take part in trials of the effectiveness and safety of potential treatments.[111]
In February 2020, China launched a mobile app to deal with the disease outbreak.[112] Users a
re asked to enter their name and ID number. The app is able to detect 'close contact' using s
urveillance data and therefore a potential risk of infection. Every user can also check the s
tatus of three other users. If a potential risk is detected, the app not only recommends self
-quarantine, it also alerts local health officials.[113]
Big data analytics on cellphone data, facial recognition technology, mobile phone tracking an
d artificial intelligence are used to track infected patients and people whom they contacted
in South Korea, Taiwan and Singapore.[114][115] In March 2020, the Israeli government enabled
security agencies to track mobile phone data of people supposed to have coronavirus. The meas
ure was taken to enforce quarantine and protect those who may come into contact with infected
citizens.[116] Also in March 2020, Deutsche Telekom shared private cellphone data with the fe
deral government agency, Robert Koch Institute, in order to research and prevent the spread o
f the virus.[117] Russia deployed facial recognition technology to detect quarantine breaker
s.[118] Italian regional health commissioner Giulio Gallera said that "40% of people are cont
inuing to move around anyway", as he is been informed by mobile phone operators.[119]
Infected individuals may experience distress from quarantine, travel restrictions, side effec
ts of treatment, or fear of the infection itself. To address these concerns, the National Hea
lth Commission of China published a national guideline for psychological crisis intervention
on 27 January 2020.[120][121]
The severity of COVID-19 varies. The disease may take a mild course with few or no symptoms,
resembling other common upper respiratory diseases such as the common cold. Mild cases typica
lly recover within two weeks, while those with severe or critical disease may take three to s
ix weeks to recover. Among those who have died, the time from symptom onset to death has rang
ed from two to eight weeks.[124]
Children of all ages are susceptible to the disease, but are likely to have milder symptoms a
nd a much lower chance of severe disease than adults; in those younger than 50 years, the ris
k of death is less than 0.5%, while in those older than 70 it is more than 8%.[64][125] Pregn
ant women are at particular risk for severe infection.[126][127]
In some patients COVID-19 may affect the lungs causing pneumonia. In those most severely affe
cted, COVID-19 may rapidly progress to acute respiratory distress syndrome (ARDS) causing res
piratory failure, septic shock, or multi-organ failure.[128][129] Complications associated wi
th COVID-19 include sepsis, abnormal clotting, and damage to the heart, kidneys, and liver. C
lotting abnormalities, specifically an increase in prothrombin time, have been described in
6% of those admitted to hospital with COVID-19, while abnormal kidney function is seen in 4%
of this group.[130] Liver injury as shown by blood markers of liver damage is frequently seen
in severe cases.[131]
Many of those who die of COVID-19 have preexisting conditions, including hypertension, diabet
es mellitus, and cardiovascular disease.[132] The Italian Istituto Superiore di Sanità report
ed that, out of over 2000 deaths from the disease in the country, 99.8% had at least one pree
xisting condition with the average patient having 2.7.[133][134] According to the same repor
t, the median time between onset of symptoms and death was eight days with a difference of on
e day between patients who were being[clarification needed] treated in an ICU compared to tho
se who were not.[133] In a study of early cases, the median time from exhibiting initial symp
toms to death was 14 days, with a full range of six to 41 days.[135] In a study by the Nation
al Health Commission (NHC) of China, men had a death rate of 2.8% while women had a death rat
e of 1.7%.[136] Histopathological examinations of post-mortem lung samples show diffuse alveo
lar damage with cellular fibromyxoid exudates in both lungs. Viral cytopathic changes were ob
served in the pneumocytes. The lung picture resembled acute respiratory distress syndrome (AR
DS).[137] In 11.8% of the deaths reported by the National Health Commission of China, heart d
amage was noted by elevated levels of troponin or cardiac arrest.[34]
Availability of medical resources and the socioeconomics of a region may also affect mortalit
y.[138] Estimates of the mortality from the condition vary because of those regional differen
ces,[139] but also because of methodological difficulties. The under-counting of mild cases c
an cause the mortality rate to be overestimated.[140] However, the time lag in death occurrin
g can mean the mortality rate is underestimated.[141][142]
It is unknown if past infection provides effective and long-term immunity in people who recov
er from the disease.[143] Immunity is likely, based on the behaviour of other coronaviruses,
[144] but cases in which recovery from COVID-19 have been followed by positive tests for coro
navirus at a later date have been reported.[145][146] It is unclear if these cases are the re
sult of reinfection, relapse, or testing error.
Concerns have been raised about long-term sequelae of the disease. The Hong Kong Hospital Aut
hority found a drop of 20% to 30% in lung capacity in some people who recovered from the dise
ase, and lung scans suggested organ damage.[147]
The case fatality rate (CFR) depends on the availability of healthcare, the typical age and h
ealth problems within the population, and the number of undiagnosed cases.[149][150] Prelimin
ary research has yielded case fatality rate numbers between 2% and 3%;[15] in January 2020 th
e WHO suggested that the case fatality rate was approximately 3%,[151] and 2% in February 202
0 in Hubei.[152] Other CFR numbers, which adjust for differences in time of confirmation, dea
th or remission but are not peer reviewed, are respectively 7%[153] and 33% for people in Wuh
an 31 January.[154] An unreviewed preprint of 55 deaths noted that early estimates of mortali
ty may be too high as asymptomatic infections are missed. They estimated a mean infection fat
ality ratio (IFR, the mortality among infected) ranging from 0.8% to 0.9%.[155] The outbreak
in 2019–2020 has caused at least 288,380edit confirmed infections and 12,836edit deaths.[6]
[7]
The epidemic spreads faster where people are close together and/or travel to other areas. Res
earchers found that travel restrictions can reduce the basic reproduction number from 2.35 to
1.05, allowing the epidemic to be manageable.[156]
An observational study of nine people found no vertical transmission from mother to the newbo
rn.[157] Also, a descriptive study in Wuhan found no evidence of viral transmission through v
aginal sex (from female to partner), but authors note that transmission during sex might occu
r through other routes.[158]
Total confirmed cases over time
Total deaths over time
Total confirmed cases of COVID-19 per million people, 20 March 2020[159]
Total confirmed deaths due to COVID-19 per million people, 20 March 2020[160]
The World Health Organization announced on 11 February 2020 that "COVID-19" would be the offi
cial name of the disease. World Health Organization chief Tedros Adhanom Ghebreyesus said "c
o" stands for "corona", "vi" for "virus" and "d" for "disease", while "19" was for the year,
as the outbreak was first identified on 31 December 2019. Tedros said the name had been chose
n to avoid references to a specific geographical location (i.e. China), animal species, or gr
oup of people in line with international recommendations for naming aimed at preventing stigm
atisation.[161][162]
While the disease is named COVID-19, the virus that causes it is named severe acute respirato
ry syndrome coronavirus 2 or SARS-CoV-2.[163] The virus was initially referred to as the 2019
novel coronavirus or 2019-nCoV.[164] The WHO additionally uses "the COVID-19 virus" and "the
virus responsible for COVID-19" in public communications.[163]
Because of its key role in the transmission and progression of the disease, ACE2 has been the
focus of a significant proportion of research and various therapeutic approaches have been su
ggested.[42]
There is no available vaccine, but research into developing a vaccine has been undertaken by
various agencies. Previous work on SARS-CoV is being utilised because SARS-CoV-2 and SARS-CoV
both use the ACE2 receptor to enter human cells.[165] There are three vaccination strategies
being investigated. First, researchers aim to build a whole virus vaccine. The use of such a
virus, be it inactive or dead, aims to elicit a prompt immune response of the human body to a
new infection with COVID-19. A second strategy, subunit vaccines, aims to create a vaccine th
at sensitises the immune system to certain subunits of the virus. In the case of SARS-CoV-2 s
uch research focuses on the S-spike protein that helps the virus intrude the ACE2 enzyme rece
ptor. A third strategy is the nucleic acid vaccines (DNA or RNA vaccines, a novel technique f
or creating a vaccination). Experimental vaccines from any of these strategies would have to
be tested for safety and efficacy.[166]
On 16 March 2020, the first clinical trial of a vaccine started with four volunteers in Seatt
le. The vaccine contains a harmless genetic code copied from the virus that causes the diseas
e.[167]
The difficulty with vaccine development is that older people who are most vulnerable to infec
tion are poorly vaccinated due to age-related degradation of the thymus. Therefore, along wit
h the development of a vaccine, it is necessary to develop ways to increase immunity in these
people. One of these methods can be treatment with recombinant interleukin 7. Interleukin 7 p
lays an extremely important role in the maturation and reproduction of lymphoid cells. Theref
ore, it makes sense, along with vaccines, to develop methods for restoring the immune functio
n in the elderly, for example, by improving it using treatment with recombinant interleukin
7.[168][169]
Several existing antiviral medications are being looked at to treat COVID-19 and some are mov
ing into clinical trials.[106] There is tentative evidence for remdesivir as of March 2020.[1
70] Remdesivir inhibits SARS-CoV-2 in vitro.[171] Phase 3 clinical trials are being conducted
in the US, in China, and in Italy.[106][172][173]
Chloroquine, previously used to treat malaria, was being studied in China in February 2020, w
ith positive preliminary results.[174] Chloroquine and hydroxychloroquine effectively inhibit
SARS-CoV-2 in vitro,[171] with hydroxychloroquine proving to be more potent than chloroquine
and with a more tolerable safety profile.[175] Preliminary results from a trial suggested tha
t chloroquine is effective and safe in treating COVID-19 associated pneumonia, "improving lun
g imaging findings, promoting a virus-negative conversion, and shortening the disease cours
e".[174] However, there are calls for more review of the research to date.[176] The Guangdong
Provincial Department of Science and Technology and the Guangdong Provincial Health and Healt
h Commission issued a report stating that chloroquine phosphate "improves the success rate of
treatment and shortens the length of patient's hospital stay" and recommended it for people d
iagnosed with mild, moderate and severe cases of novel coronavirus pneumonia.[177] On 17 Marc
h, the Italian Pharmaceutical Agency included chloroquine and hydroxychloroquine in the list
of drugs with positive preliminary results for treatment of COVID-19.[178] Korean and Chinese
Health Authorities recommend the use of chloroquine.[179][180]
The Chinese 7th edition guidelines also include interferon, ribavirin, or umifenovir for use
against COVID-19.[180] Teicoplanin appears to inhibit SARS-CoV-2 and the related MERS conavir
uses and is viewed as a potential treatment for COVID-19.[181]
In 2020, a randomized controlled trial published in the New England Journal of Medicine found
that lopinavir/ritonavir was ineffective in the treatment of severe illness caused by SARS-Co
V-2 and did not lead to shorter hospital stays or better outcomes compared to standard care a
lone.[182] Nitazoxanide has been recommended for further in vivo study after demonstrating lo
w concentration inhibition of SARS-CoV-2.[171]
Studies have demonstrated that initial spike protein priming by transmembrane protease serine
2 (TMPRSS2) is essential for entry of SARS-CoV-2 via interaction with the ACE2 receptor.[183]
[184] These findings suggest that the TMPRSS2 inhibitor camostat approved for use in Japan fo
r inhibiting fibrosis in liver and kidney disease might constitute an effective off-label tre
atment.[183]
In February 2020, Favipiravir was being studied in China for experimental treatment of the em
ergent COVID-19 disease.[185][186] On 17 March, Chinese officials suggested the drug had been
effective in treating COVID in Wuhan and Shenzhen.[187][188]
Cytokine storm, a life-threatening medical condition, can be a complication in the later stag
es of severe COVID-19. There is evidence that hydroxychloroquine has anti-cytokine storm prop
erties.[189]
Tocilizumab has been included in treatment guidelines by China's National Health Commission a
fter a small study was completed.[190][191] It is undergoing a phase 2 non randomized test at
the national level in Italy after showing positive results in people with severe disease.[17
8][192][193][unreliable medical source?] Combined with a serum ferritin blood test to identif
y cytokine storms, it is meant to counter such developments, which are thought to be the caus
e of death in some affected people.[194][195][196] The interleukin-6 receptor antagonist was
approved by the FDA for treatment against cytokine release syndrome induced by a different ca
use, CAR T cell therapy, in 2017.[197][unreliable medical source?]
Using blood donations from people who have recovered from COVID-19 is being investigated,[19
8] a strategy that was tried for SARS.[198] The mechanism of action is that the antibodies pr
oduced by the immune systems of those who have already recovered are transferred to people in
need of them via a nonvaccine form of immunization.[198] Other forms of passive antibody ther
apy, such as with manufactured monoclonal antibodies, are in development.[198] Convalescent s
erum production could be increased for quicker deployment.[199]
```

In [6]:
```python
len("".join(text))
```

Out[6]:
```
28318
```

In [15]:
```python
#import summarize from gensim
from gensim.summarization.summarizer import summarize
from gensim.summarization import keywords
```

In [16]:
```python
text = str(text)
```

In [30]:
```python
print(keywords(text, ratio = 0.1))
```

```
infection
infected
infections
diseases
case
nthe
medical
medications
medication
covid
coronavirus disease
including
includes
included
symptoms include
symptom
health
vaccine
vaccination
vaccines
vaccinated
hand
hands
cases result
virus
treatment
treatments
recommended
recommends
recommend
recommendations
people
tested
testing
test
develop
developed
developing
development
developments
time
blood tests
hospital
hospitalization
respiratory syndrome
lungs
lung
severe
severity
severely
china
deaths
death
organization
organs
organ
care
rate
immunity
immune
immunization
cells
cell
study
studied
suggested
suggest
protein
proteins
caused
causing
cause
causes
findings
pneumonia
ace
agencies
agency
data
progress
progresses
progression
samples
sample
avoid
avoided
stay
stays
image
imaging
chinese
march
difficulty
difficulties
showing
showed
specific
specifically
resulting
results
italian
interleukin
face
risk
individuals
individual
initial
initially
non
spike
spikes
need
needed
spread
spreads
quarantine
authorities
authority
authors
genetic
national
antibody
antibodies
transmission
person
persons
personal
receptor
inhibits
inhibit
inhibition
inhibiting
patients
patient
public
government
```

In [25]:
```python
a=summarize(text,ratio=0.1)
a
```

Out[25]:
```
'Muscle pain, sputum production and sore throat are less common.[5][12] While the majority of
cases result in mild symptoms,[13] some progress to severe pneumonia and multi-organ failure.
```