# 從歐美新冠肺炎重災疫情看台灣重症醫療應有的應變作為

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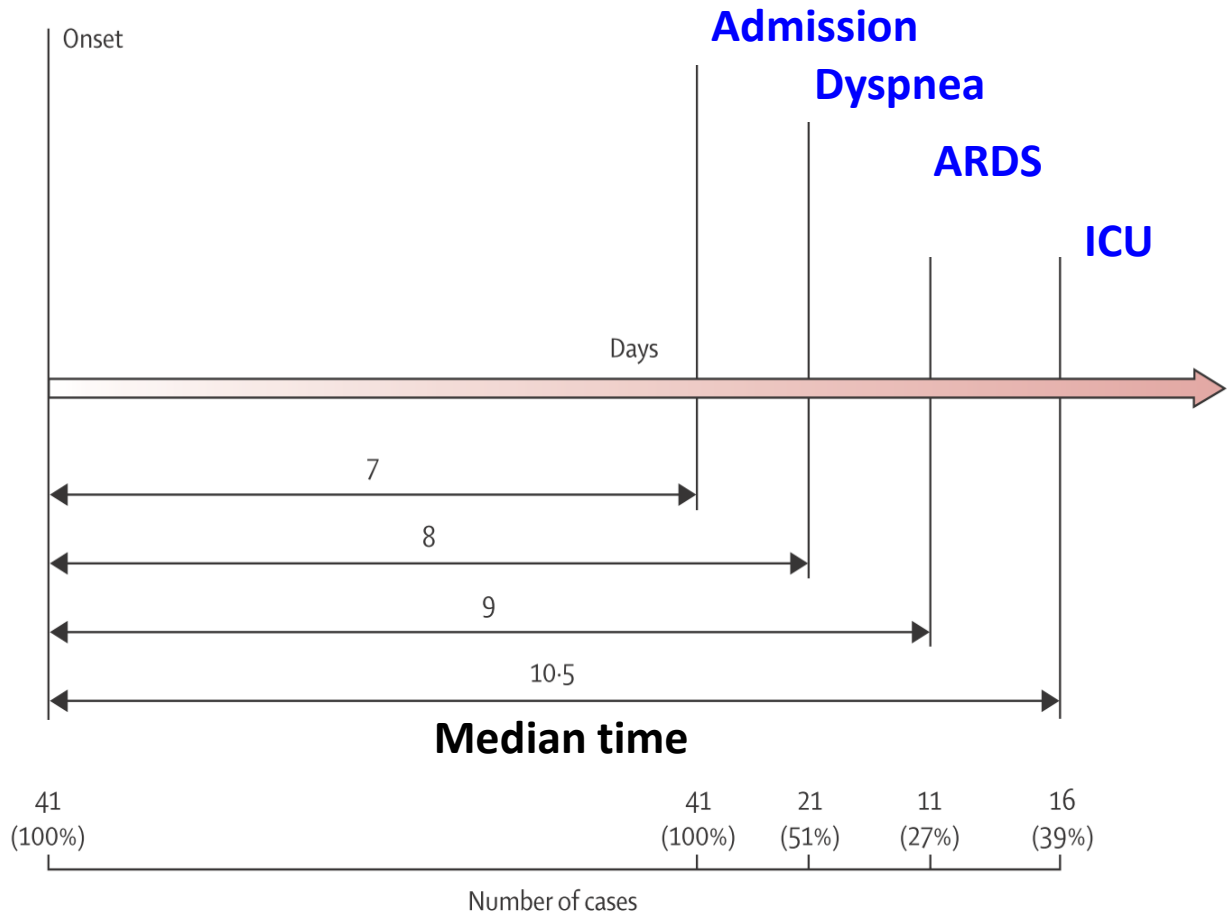
# 綱要

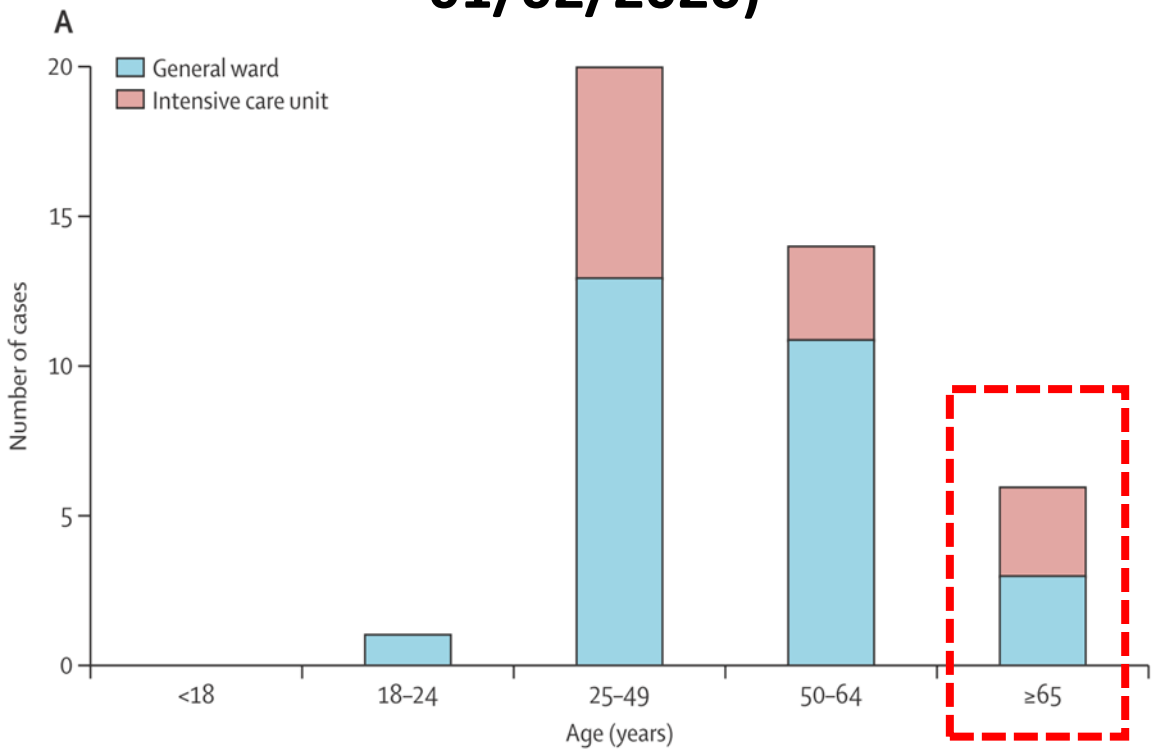
- 歐美重症疫情簡介
- 世界各國重症資源分布
- 疫情嚴重度對醫療體系的衝擊
- 呼吸器議題
- 國際重症醫療指引與建議
- 台灣重症醫療共識與應變規劃

# Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China

## (41 cases, Mortality 15%)




## (Jin Yintan Hospital, Wuhan, 01/02/2020)




**50% need ICU in age >65**

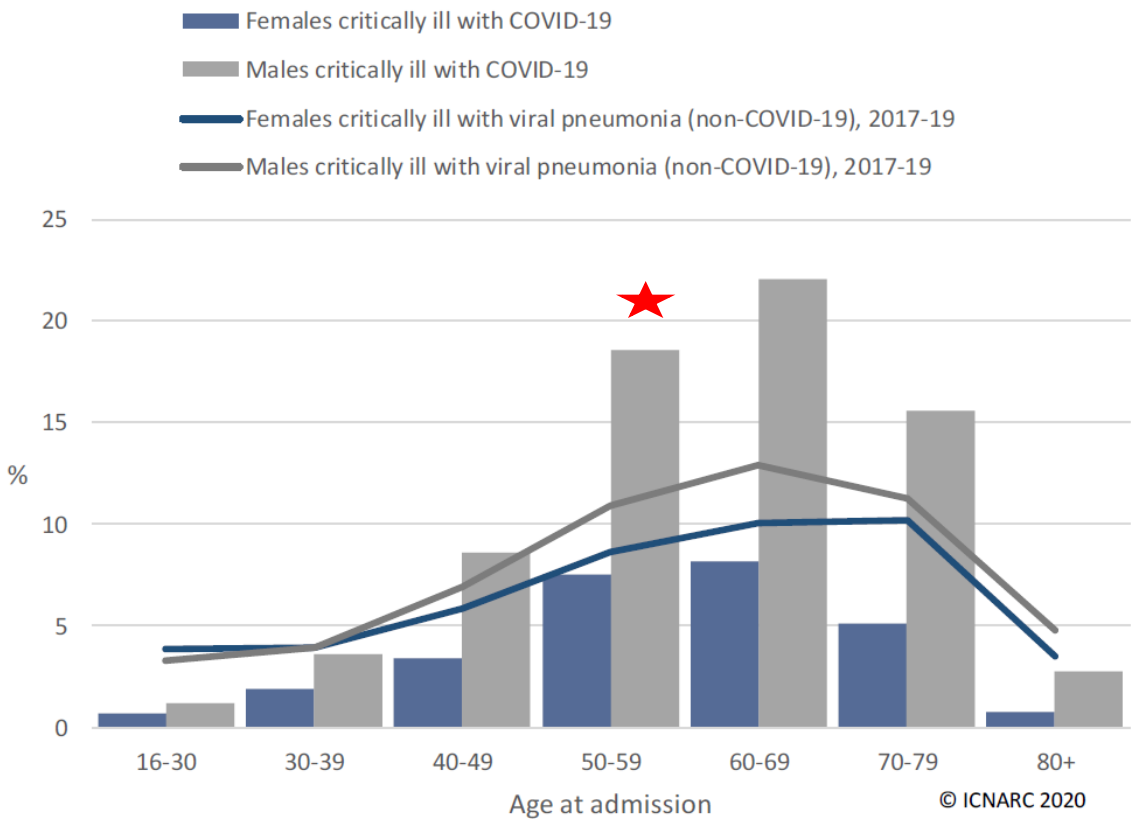
*Lancet* 2020; 395: 497–506

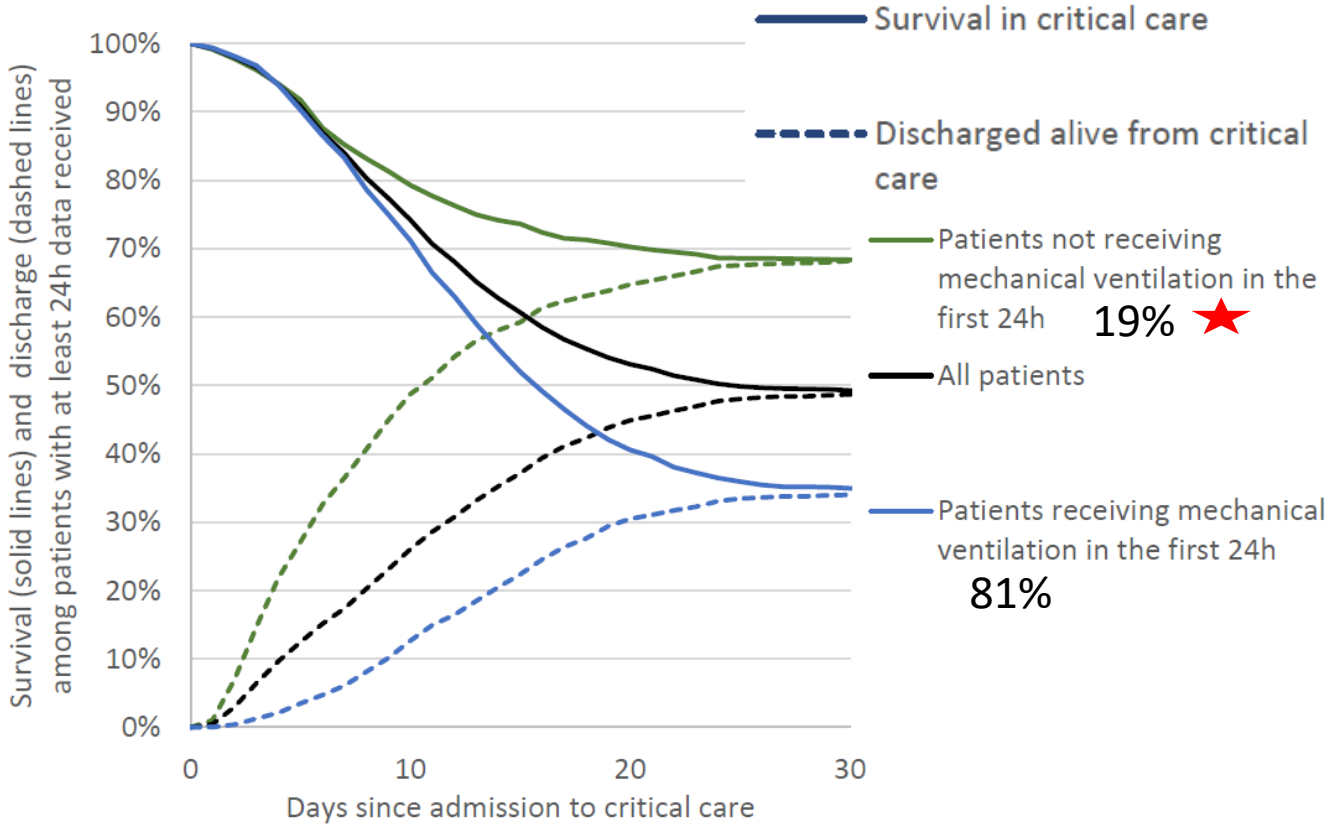
# U.K. Prime Minister Boris Johnson moved to ICU as coronavirus symptoms have 'worsened'


**3/26 fever** → 10 days → **4/5 hospital** → 4/6-4/9 ICU → 4 days

109.04.07. 新聞稿

# ICNARC report on COVID-19 in critical care (UK)



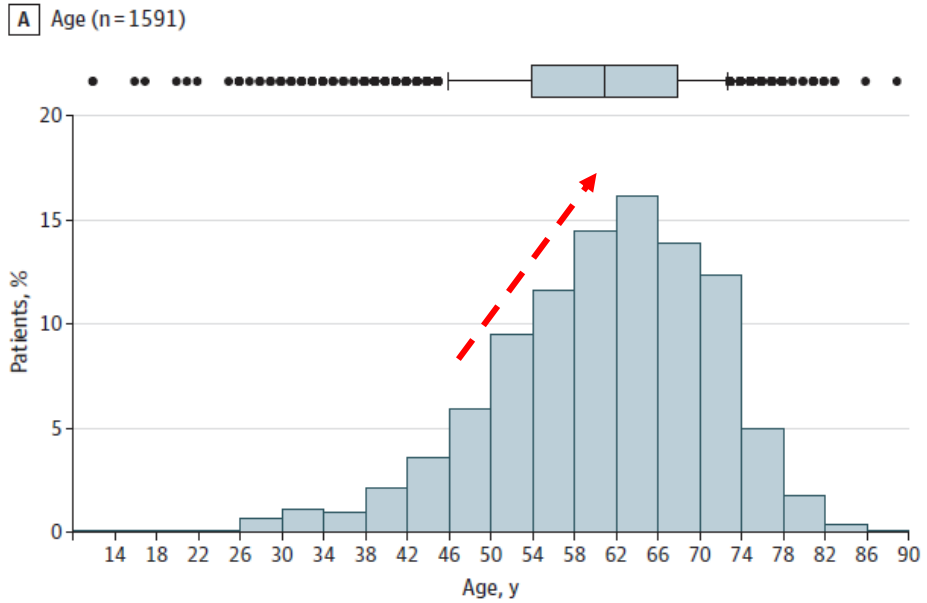




Source: ICNARC COVID-19 Study Case Mix Programme Database 10 April 2020

# 義大利是新冠肺炎重症疫情最為嚴重的歐洲國家


義大利醫師揭露當地醫療體系崩潰真相，並認為恐慌並不比忽視、粗心來得恐怖。
（路透檔案照）

# Baseline Characteristics and Outcomes of 1591 Patients Infected With SARS-CoV-2 Admitted to ICUs of the Lombardy Region, Italy



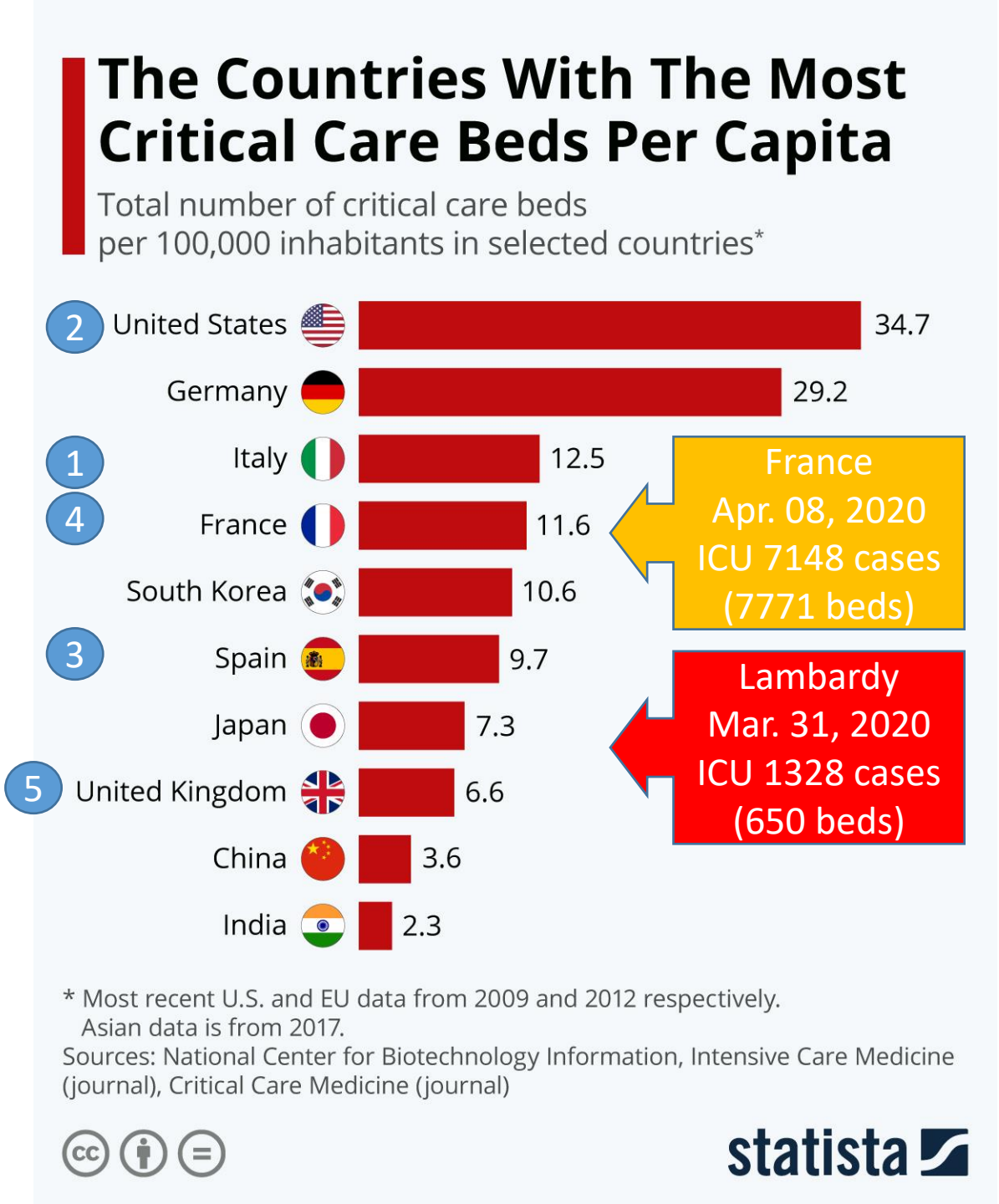

Mortality 26%

40%

52%

| | Patients by age, y, No. (%) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | All (N = 1591) | 0-20 (n = 4) | 21-40 (n = 56) | 41-50 (n = 143) | 51-60 (n = 427) | 61-70 (n = 598) | 71-80 (n = 341) | 81-90 (n = 21) | 91-100 (n = 1) |
| Overall | | | | | | | | | |
| Outcome, No. with data | 1581 | 2 | 56 | 142 | 423 | 596 | 340 | 21 | 1 |
| Died in ICU | 405 (26) | 0 | 4 (7) | 16 (11) | 63 (15) | 174 (29) | 136 (40) | 11 (52) | 1 (100) |
| Discharged from ICU | 256 (16) | 0 | 20 (36) | 35 (25) | 90 (21) | 69 (12) | 40 (12) | 2 (10) | 0 |
| Still in ICU as of 3/25/2020[a] | 920 (58) | 2 (100) | 32 (57) | 91 (64) | 270 (64) | 353 (59) | 164 (48) | 8 (38) | 0 |

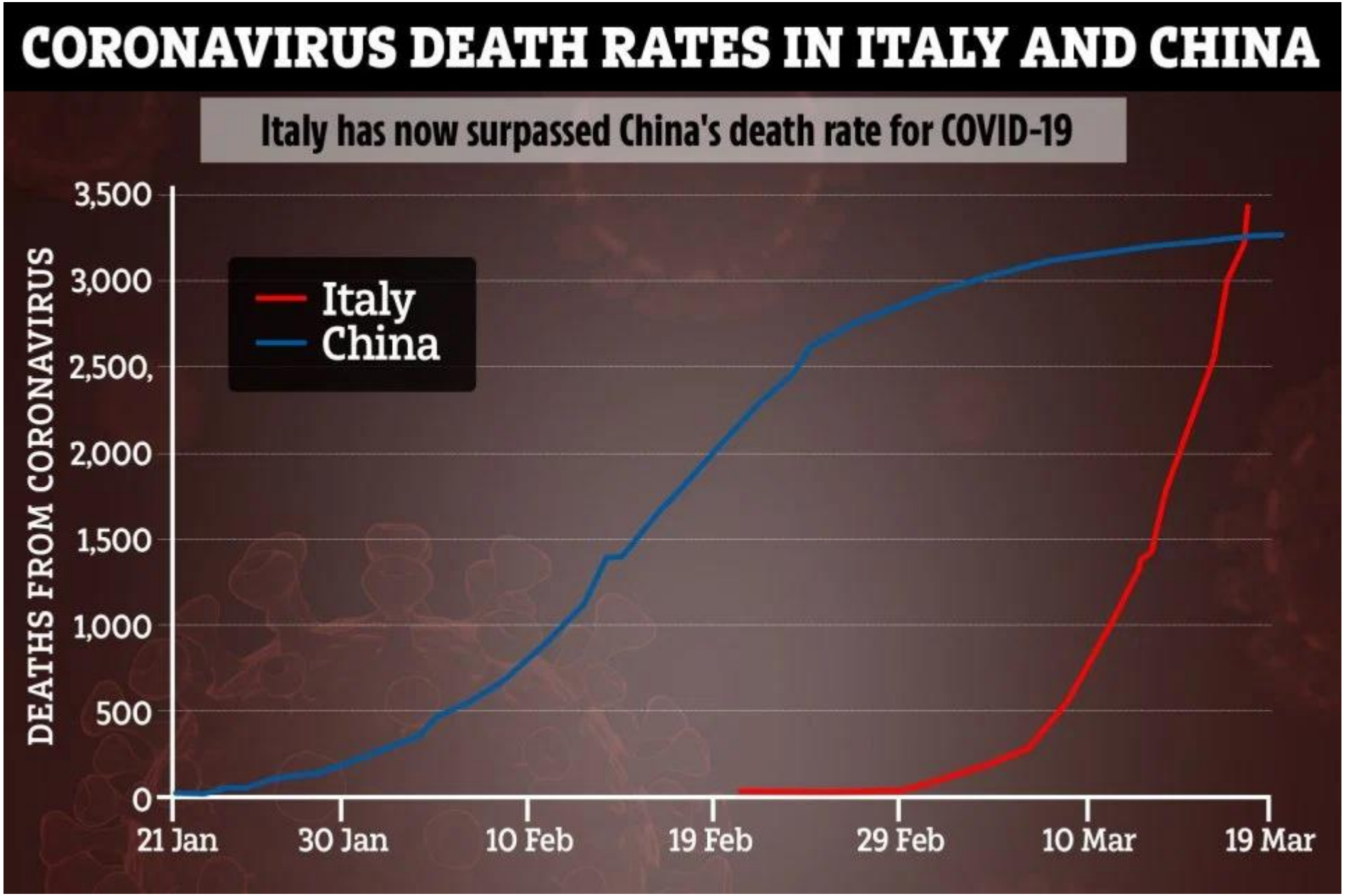
JAMA. doi:10.1001/jama.2020.5394



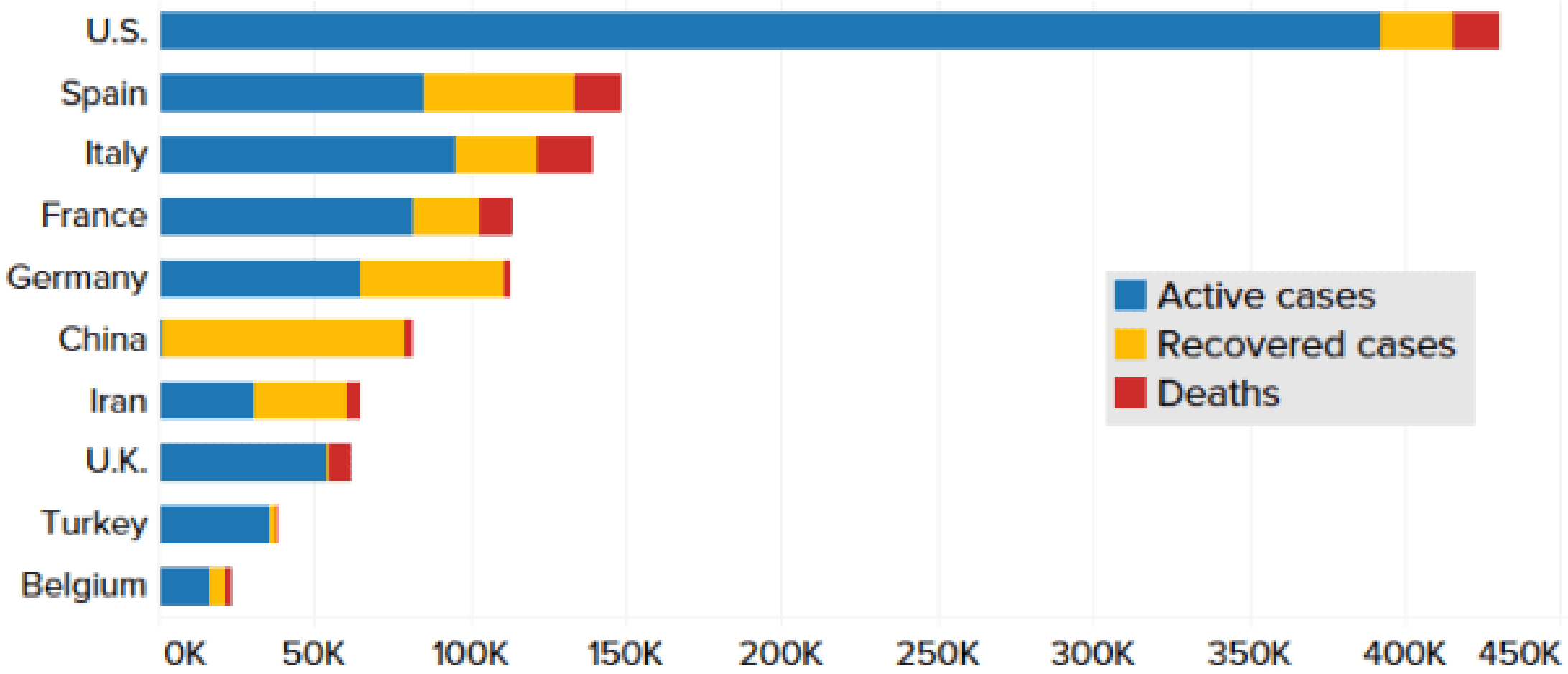

# ICU Capacity

**Taiwan**
**ICU 30.2 (7115)**
BU 0.6 (**145**)
RCC 3.8 (888)
POR 6.4

衛福部統計處 2018 年資料


CORONAVIRUS DEATH RATES IN ITALY AND CHINA
Italy has now surpassed China's death rate for COVID-19
DEATHS FROM CORONAVIRUS
3,500
3,000
2,500,
2,000
1,500
1,000
500
0
Italy
China
21 Jan
30 Jan
10 Feb
19 Feb
29 Feb
10 Mar
19 Mar

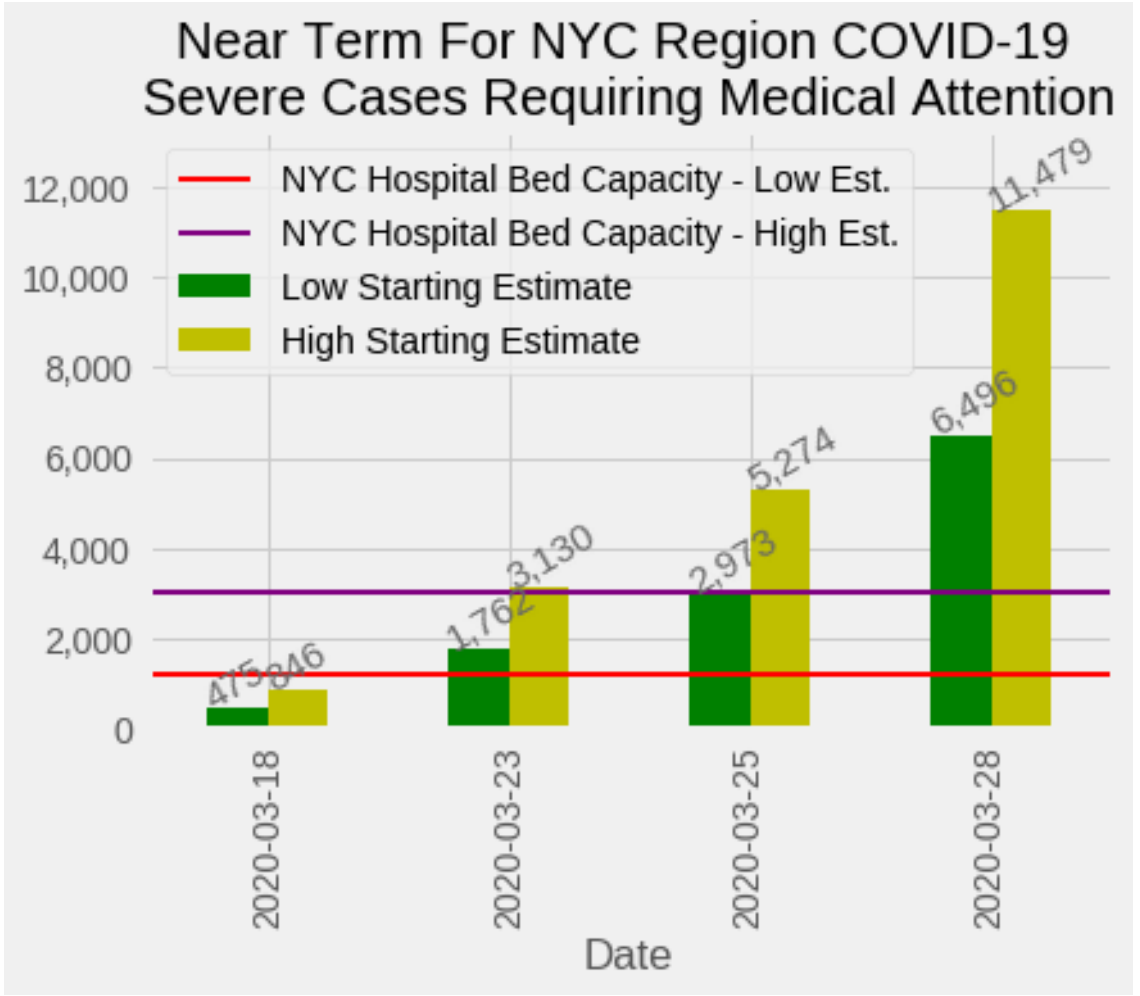
# Countries with the most reported coronavirus cases




SOURCE: Johns Hopkins University. Data as of April 9, 2020 at 9:03 a.m. HK/SIN

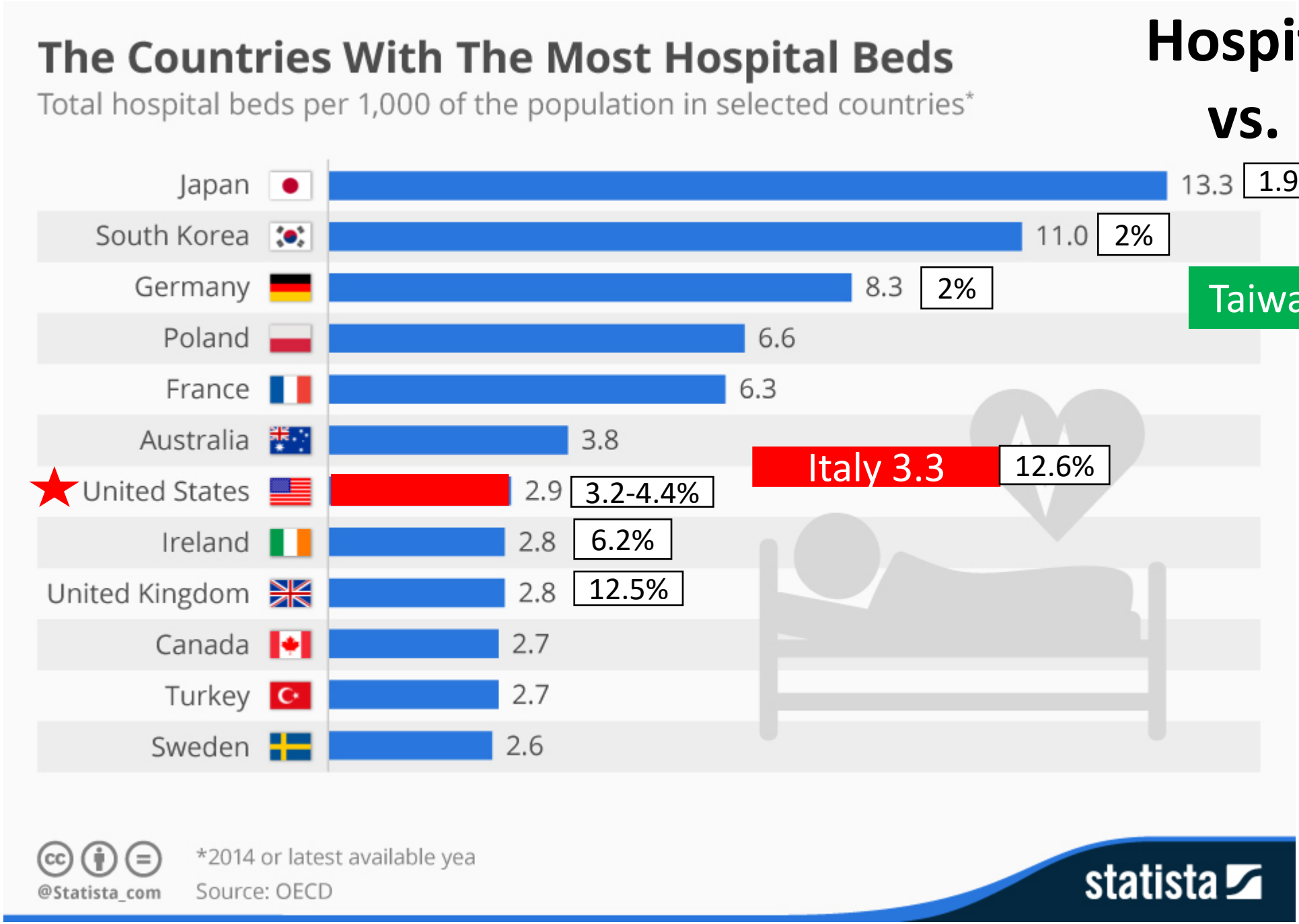
CNBC

# COVID-19 in New York



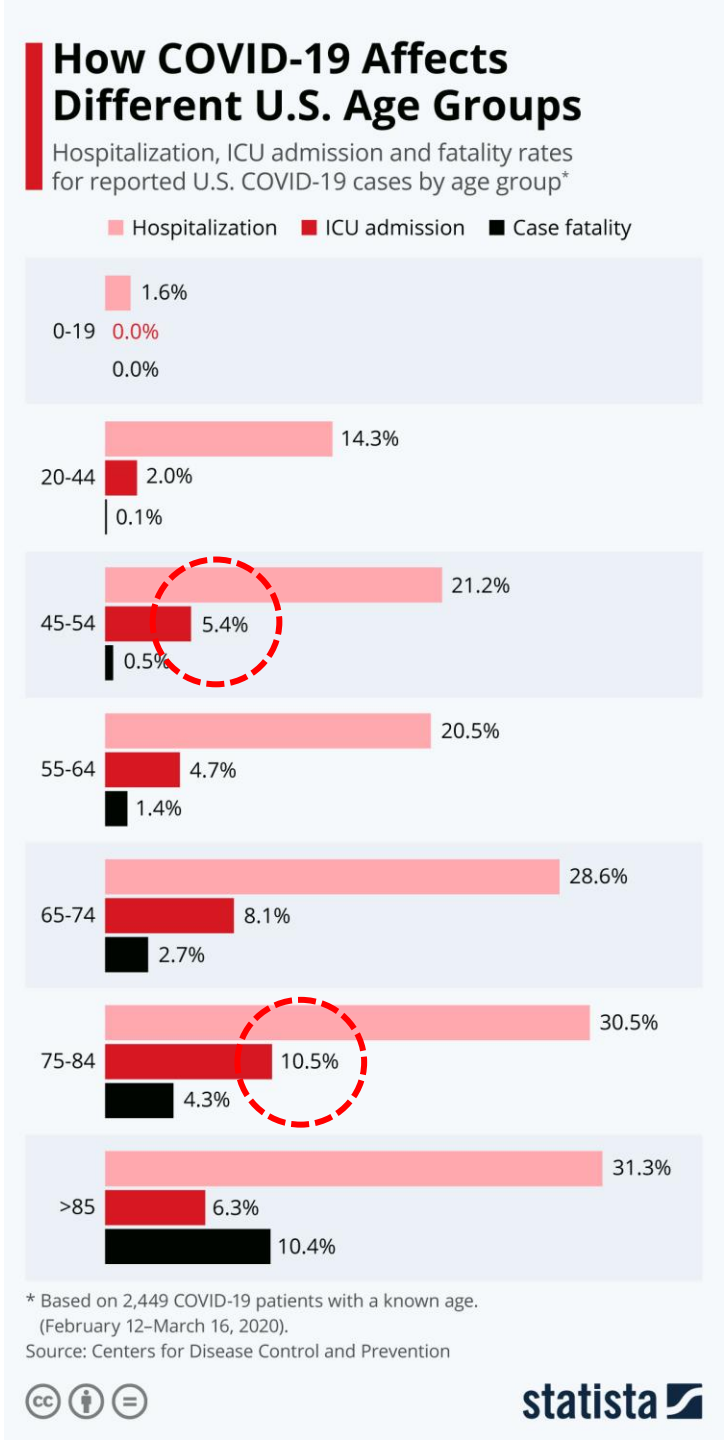

**04/07/2020**
**New York**
**Confirmed**
**130,689**
**Hospitalization**
**16,837 (13%)**
**ICU**
**4,504**
**Death**
**4,758**

# Hospital Capacity vs. Mortality




Taiwan 7.1 (148,522)

衛福部統計處
2018 年資料




Age 45-54 y/o
5.4 % need
ICU care

Age 75-84 y/o
10.5 % need
ICU care

# 方舱醫院

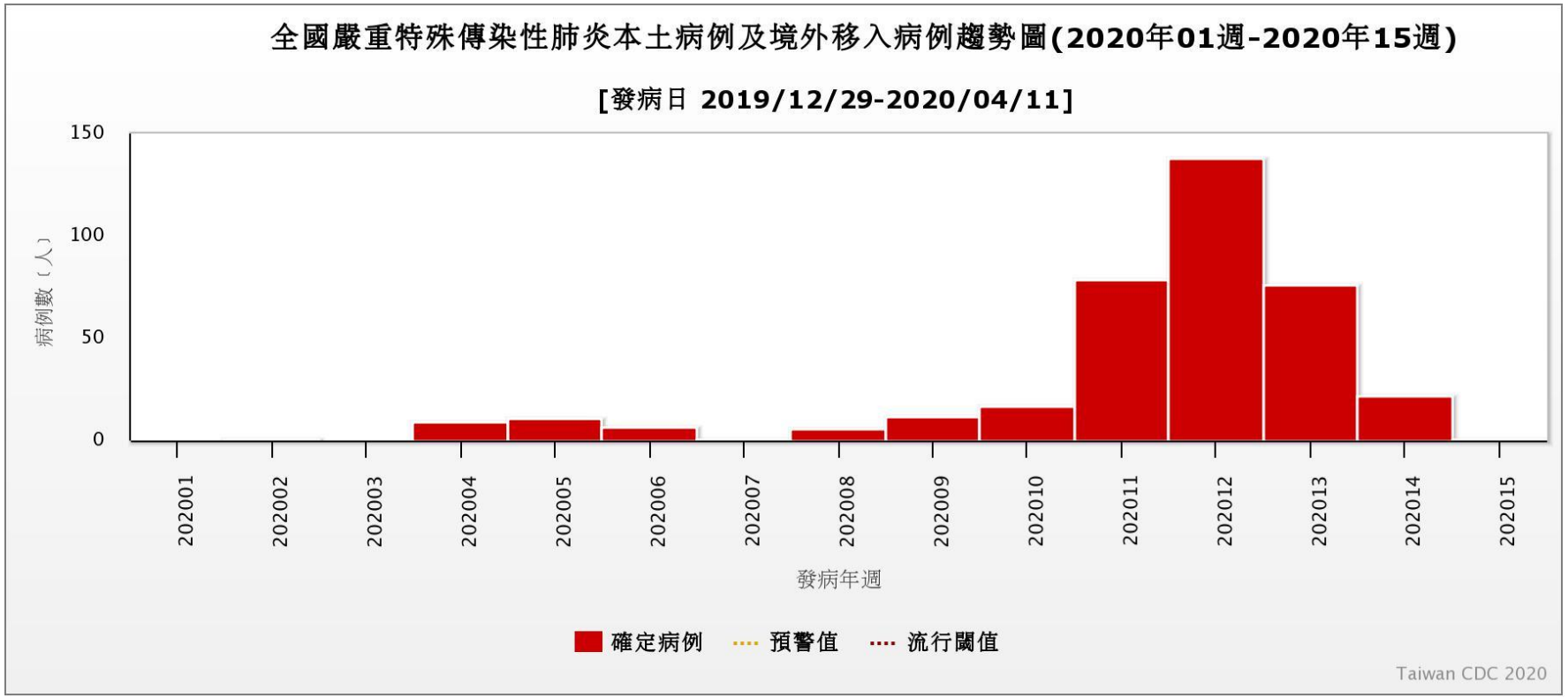
武漢

義大利

馬德里


紐約

# 台灣疫情




Confirmed cases 385
Death 6 (1.5%)
Discharged 99
Hospitalization 73%
(佔健保總床數0.18%)

Taiwan, CDC report, 2020/4/11

# Health Impacts of Moderate-to-Severe Pandemics in USA

- Estimates of the reproductive number (R) of SARS-CoV-2 show that at the beginning of the epidemic, at least two, on average.
- A conservatively low estimate is that **5% of the population** could become infected within 3 months.
- A recent large-scale analysis from China suggests that **80%** of those infected either are asymptomatic or have **mild symptoms**, a finding that implies that demand for **advanced medical services** might apply to **only 20% of the total infected（方艙醫院可處理80% cases）.**
- Of patients infected with Covid-19, about 15% have severe illness and **5% have critical illness**.
- Overall, Covid-19 is substantially deadlier (**3%**) than seasonal **influenza**, which has mortality of roughly **0.1%**.

NEJM March 23, 2020, DOI: 10.1056/NEJMsb2005114

# Health care effects of COVID-19 vs. influenza in USA

**Table l. Potential U.S. Health and Health Care Effects of Pandemic Covid-19 as Compared with Infuenza.***

| Category | Influenza | | Covid-19 | |
|---|---|---|---|---|
| | Moderate | Severe | Moderate | Severe |
| Percentage of population infected (U.S. population, 320 million) | 20 | 20 | 5 | 20 |
| No. of ill persons | 64,000,000 | 64,000,000 | 16,000,000 | 64,000,000 |
| No. of outpatients | 32,000,000 | 32,000,000 | 3,200,000 | 12,800,000 |
| No. of hospitalized patients | 800,000 | 3,800,000 | 1,280,000 | 5,120,000 |
| **No. of patients admitted to the ICU** | **160,000** | 1,200,000 | **6 X 960,000** | **24 X 3,840,000** |
| No. of deaths | **48,000** | 510,000 | 80,000 | **1,920,000** |

The severe Covid-19 scenario is based on the following assumptions: 80% of infected patients are asymptomatic or have mild symptoms not requiring health care services; of the 20% requiring health care services, 40% (8% overall) need hospitalization; 6% of all infected patients — 30% of those needing health care — need intensive care; and there is a death rate of 3.0%.

NEJM March 23, 2020, DOI: 10.1056/NEJMsb2005114

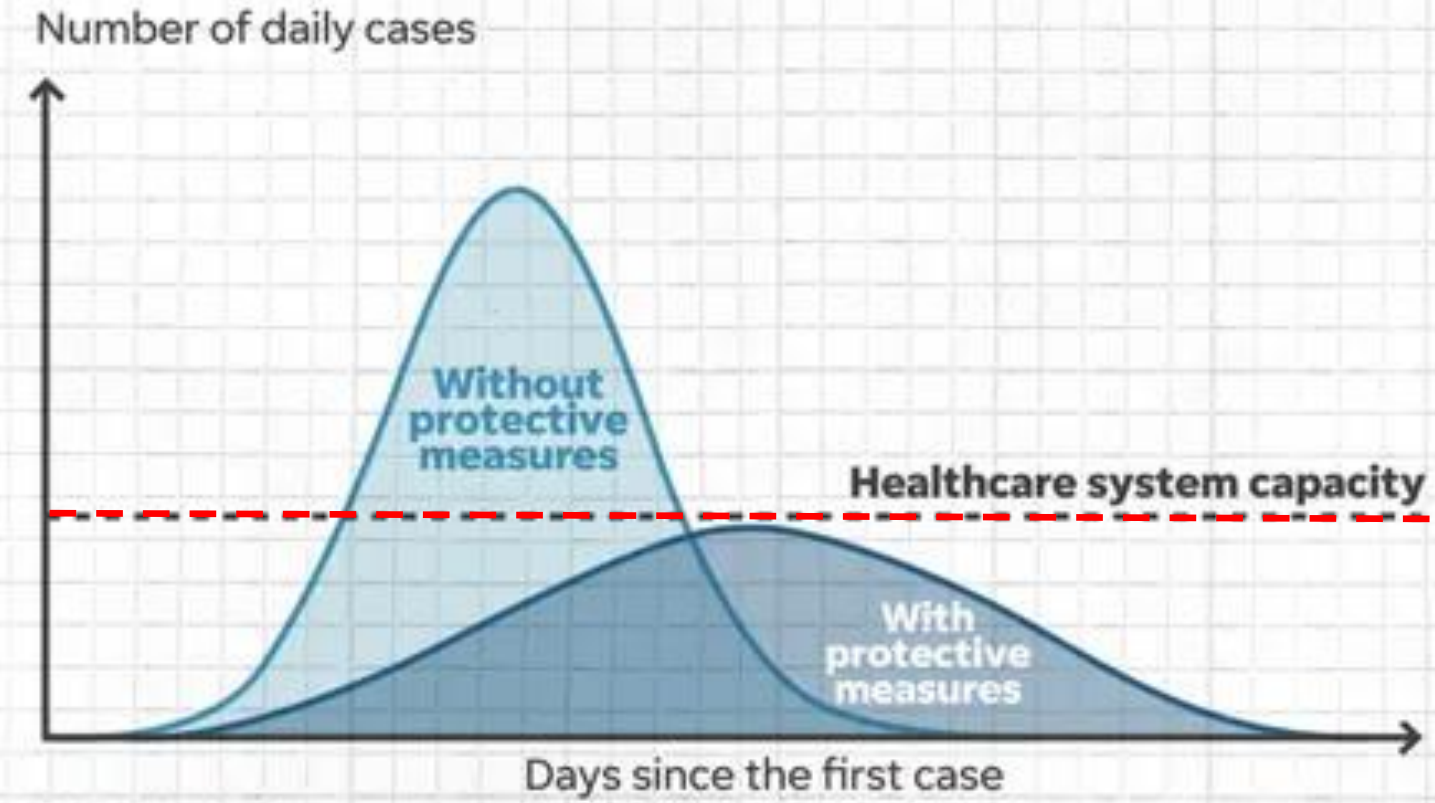
# Health System Capacity in USA

- In the community hospitals of 2018 USA, there were 792,417 beds, with 3532 emergency departments and 68,400 ICU beds for the adult population.
- There are approximately 62,000 full-featured ventilators (the type needed to adequately treat the most severe complications of Covid-19) available in USA.
- Approximately 10,000 to 20,000 more are estimated to be on call in our Strategic National Stockpile, and 98,000 ventilators that are not full-featured but can provide basic function in an emergency during crisis standards of care also exist.
- In 2018, community hospitals employed about 76,000 full-time RT, and there are about 512,000 critical care nurses.
- The Covid-19 pandemic is likely to cause a shortage of medical staffs, hospital beds, ICU beds, and ventilators.

NEJM March 23, 2020, DOI: 10.1056/NEJMsb2005114

# SOCIAL DISTANCING

FAQs




SOURCE: CDC

# Mechanical Ventilators Issues

The Moscow Times
INDEPENDENT NEWS FROM RUSSIA





## Exclusive: Rich Russians Are Hoarding Ventilators to Protect Themselves Against the Coronavirus

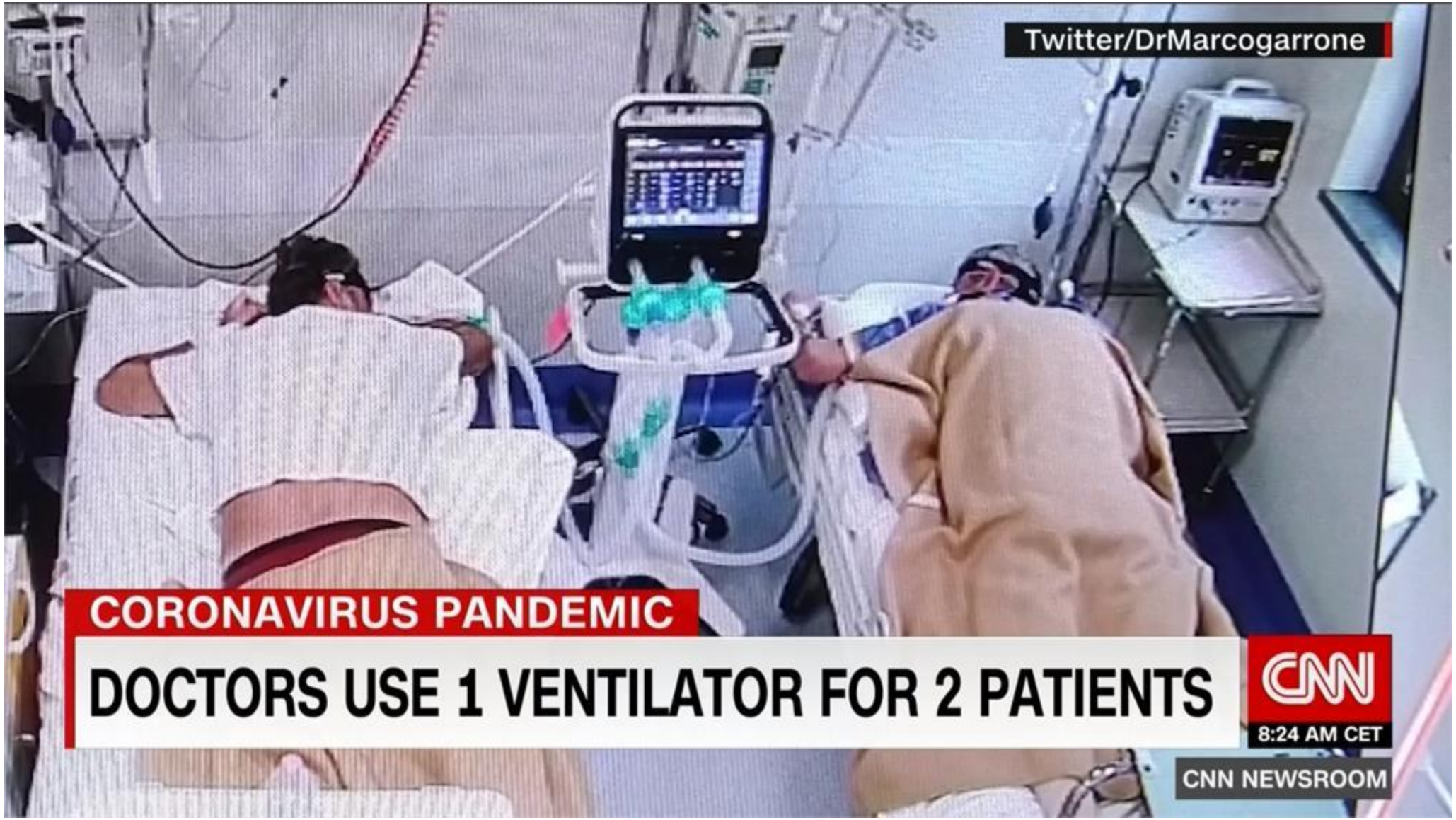
Meanwhile, doctors worry that Russia's regions don't have enough.

By Pjotr Sauer, Evan Gershkovich and Jake Cordell
Updated: March 21, 2020



**Russia has between 42,000 and 43,000 ventilators nationwide, according to the Headway Group.**

# Multiple Patients per Ventilator



# Joint Statement on Multiple Patients per Ventilator

- March 27, 2020
- The Society of Critical Care Medicine (SCCM), American Association for Respiratory Care (AARC), American Society of Anesthesiologists (ASA), Anesthesia Patient Safety Foundation (ASPF), American Association of Critical-Care Nurses (AACN), and American College of Chest Physicians (CHEST) issue this consensus statement on the concept of placing multiple patients on a single mechanical ventilator.
- The above-named organizations advise clinicians that **sharing mechanical ventilators should not be attempted because it cannot be done safely with current equipment.**

http://www.chestnet.org/News/Press-Releases/2020/03/Joint-Statement-on-Multiple-Patients-per-Ventilator

# Sharing ventilators should not be attempted

- Volumes would go to the most compliant lung segments.
- PEEP, which is of critical importance in these patients, would be impossible to manage.
- Monitoring patients and measuring pulmonary mechanics would be challenging, if not impossible.
- Alarm monitoring and management would not be feasible.
- Individualized management for clinical improvement or deterioration would be impossible.
- In the case of a cardiac arrest, ventilation to all patients would need to be stopped to allow the change to bag ventilation without aerosolizing the virus and exposing healthcare workers. This circumstance also would alter breath delivery dynamics to the other patients.
- The added circuit volume defeats the operational self-test (the test fails). The clinician would be required to operate the ventilator without a successful test, adding to errors in the measurement.
- Additional external monitoring would be required. The ventilator monitors the average pressures and volumes.
- Even if all patients connected to a single ventilator have the same clinical features at initiation, they could deteriorate and recover at different rates, and distribution of gas to each patient would be unequal and unmonitored. The sickest patient would get the smallest tidal volume and the improving patient would get the largest tidal volume.
- **The greatest risks** occur with sudden deterioration of a single patient (e.g., pneumothorax, kinked endotracheal tube), with the balance of ventilation distributed to the other patients.
- **Finally, there are ethical issues. If the ventilator can be lifesaving for a single individual, using it on more than one patient at a time risks life-threatening treatment failure for all of them.**

http://www.chestnet.org/News/Press-Releases/2020/03/Joint-Statement-on-Multiple-Patients-per-Ventilator

# Respiratory support usage rates of **1591** ICU Patients with COVID-19 in Lombardy Region, Italy

| Patients by age, No. (%) | all | 0-20 | 21-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 |
|---|---|---|---|---|---|---|---|---|---|
| Respiratory support, No. | 1300 | 2 | 46 | 108 | 351 | 487 | 287 | 18 | 1 |
| IMV (%) | 1150 (88) | 2 (100) | 37 (80) | 87 (81) | 315 (90) | 449 (92) | 246 (86) | 14 (78) | 0 |
| NIV (%) | 137 (11) | 0 | 8 (17) | 16 (15) | 33 (9) | 36 (7) | 39 (14) | 4 (22) | 1 (100) |
| O2 mask (%) | 13 (1) | 0 | 1 (2) | 5 (5) | 3 (1) | 2 (<1) | 2 (1) | 0 | 0 |

JAMA. doi:10.1001/jama.2020.5394

# Ethical Values to Guide Rationing of Absolutely Scarce Health Care Resources in a Covid-19 Pandemic

| Ethical Values and Guiding | Principles Application to COVID-19 Pandemic |
|---|---|
| **Maximize benefits** | |
| Save the most lives | Receives the highest priority |
| Save the most life-years — maximize prognosis | Receives the highest priority |
| **Treat people equally** | |
| **First-come, first-served** | **Should not be used** |
| Random selection | Used for selecting among patients with similar prognosis |
| **Promote and reward instrumental value (benefit to others)** | |
| Retrospective — priority to those who have made relevant contributions | Gives priority to **research participants and health care workers** when other factors such as maximizing benefits are equal |
| Prospective — **priority to those who are likely to make relevant contributions** | **Gives priority to health care workers** |
| **Give priority to the worst off** | |
| Sickest first | Used when it aligns with maximizing benefits |
| Youngest first | Used when it aligns with maximizing benefits such as **preventing spread of the virus** |

NEJM March 23, 2020, DOI: 10.1056/NEJMsb2005114

# COVID-19 ICU preparation checklist

- Preparedness
- Logistics/surge capacity
- Communication
- Critical care triage
- Protection of ICU workforce
- Staffing capacity
- Essential equipment

Society of Critical Care Medicine
https://www.sccm.org/Disaster/COVID-19-ICU-Preparedness-Checklist

# General considerations in ICU pandemic planning

- Measures to reduce ICU demand
  - Deferment or Cancellation of Non-Urgent Elective Surgery
  - Development of Cooperative Agreements with Other Health Services
  - Reserving ICU Admission for Patients Requiring ICU-Specific Interventions
  - ‘Non-ICU’ Involvement in Rapid Response and Medical Emergency Teams
  - Proactive Consideration of Treatment Goals
- Measures to Increase ICU Capacity (Infrastructure and capacity)
  - Physical ICU Spaces (Infrastructure)
  - Equipment
  - ICU Discharge Facilitation

(ANZICS) COVID-19 Guideline Version 1

# General considerations in ICU pandemic planning

- Measures to increase ICU capacity (workforce and staffing)
  - General principles
  - Nursing
  - Medical
  - Allied health
  - Additional considerations
- Communication issues
  - ✓Organisational chains of command
  - ✓State and national health authorities
  - ✓Clinical quality registries (e.g. ANZICS CORE)
  - ✓Inter-organisation communications (e.g. for transfers)
  - ✓Inter-departmental communications
  - ✓Professional organisations
  - ✓Patients and families
  - ✓Staff

# Potential Strategies for a Phased and Tiered ICU Pandemic Plan

| Phase | Impact | Strategies to consider |
|---|---|---|
| **1** | Minimal impact on daily operations<br><br>Likely to occur when up to **10%** of beds are occupied by patients with pandemic illness | **Review and test pandemic response plans**, including:<br>• Infrastructure and equipment<br>• **Workforce training**, planning and support (**Staff Protection and Sustainability**)<br>• Communication plans<br>• Infection control<br>• Diagnostics and treatment protocols<br>• Transport and transfer policies<br>• Ensure 'trigger points' to move to higher level response have been agreed in advance |

(ANZICS) COVID-19 Guideline Version 1

# Potential Strategies for a Phased and Tiered ICU Pandemic Plan

| Phase | Impact | Strategies to consider |
|---|---|---|
| **2** | Moderate impact on daily operations, with ICU at or near maximum capacity<br><br>ICU is still able to meet demand for critical care and ventilated patients<br><br>Likely to occur when up to **25%** beds are occupied by patients with pandemic illness | • Measures to **reduce demand** and increase physical capacity<br>• **Repurpose** alternative clinical areas **for non-ventilated critical care** patients<br>• **Address workforce and staffing needs**<br>• Defer or divert non-emergent surgery to private hospitals or other services<br>• **Limit ICU involvement** in non-clinical ICU services (e.g. Hospital TPN) |

(ANZICS) COVID-19 Guideline Version 1

# Potential Strategies for a Phased and Tiered ICU Pandemic Plan

| Phase | Impact | Strategies to consider |
|---|---|---|
| **3** | Severe impact on daily operations, with overall demand for critical care exceeding ICU capacity<br><br>ICU at or near maximum capacity for ventilated patients<br><br>Likely to occur when up to **50%** beds are occupied by patients with pandemic illness | • Repurpose alternate clinical areas for **ventilated patients**<br>• **Reassess requirements and thresholds** for ICU admission and discharge<br>• Consider **transfer of patients to other facilities** or identify additional resources to be transferred into the hospital to facilitate on-going ICU care |

(ANZICS) COVID-19 Guideline Version 1

# Potential Strategies for a Phased and Tiered ICU Pandemic Plan

| Phase | Impact | Strategies to consider |
|---|---|---|
| **4** | Overwhelming impact on daily operations, with demand for critical care services significantly exceeding organisation-wide capacity<br><br>ICU no longer able to meet demand for ventilated patients | • Delivery of care to critically ill patients in areas without pre-existing critical care infrastructure<br><br>• Ongoing liaison with hospital and state health services |

(ANZICS) COVID-19 Guideline Version 1

# Intensive care management of COVID-19: challenges and recommendations

| ICU infrastructure | Recommendations |
|---|---|
| Airborne infection isolation rooms with **negative pressure are not universally available**, especially in resource-limited settings | Consider adequately ventilated **single rooms without negative pressure** or, if necessary, **cohort cases in shared rooms** with beds spaced apart |
| **ICU capacity** | |
| Surges in numbers of critically ill patients with COVID-19 can occur rapidly | **Implement national and regional modelling** of needs for intensive care |
| Low-income and middle-income countries have insufficient ICU beds in general, and even high income countries will be put under strain in an outbreak like COVID-19 | Consider whether increasing intensive care provision is an appropriate use of resources; if so, make plans for an increase in capacity, including **providing intensive care in areas outside ICUs** and centralising intensive care in designated ICUs |
| Increasing ICU capacity requires more **equipment** (eg, ventilators), consumables, and pharmaceuticals, which might be in short supply | Pay close attention to logistical support and the supply chain; **reduce the inflow of patients** who do not urgently require intensive care (eg, by postponing elective surgeries) |
| Ventilators are in short supply | Consider **transport, operating theatre, and military ventilators** |

Lancet Respir Med 2020, Published Online April 6, 2020

# Intensive care management of COVID-19: challenges and recommendations

| ICU staffing | Recommendations |
|---|---|
| Increasing ICU bed numbers and workload without increasing staff could result in **increased mortality** | Make plans for **augmentation of staff from other ICUs or non-ICU areas**, and provision of **appropriate training** (eg, with standardised short courses) |
| **Risk of loss of staff to illness**, medical leave, or quarantine after unprotected exposure to COVID-19, with a potentially devastating effect on morale, is high | **Minimise risk of infection**; consider segregation of teams and physical distancing to limit unprotected exposure of multiple team members, and travel restrictions to limit exposure to COVID-19, which is now global |
| **Staff** are especially vulnerable to **mental health problems** such as depression and anxiety during outbreaks | **Reassure staff through infection prevention measures**, clear communication, **limitation of shift hours**, **provision of rest areas**, and **mental health support** |
| **ICU triage** | |
| ICUs can become overwhelmed as surge strategies might not be sufficient in an emerging pandemic like COVID-19 | Consider implementing **a triage policy** that prioritizes patients for intensive care and rations scarce resources |

Lancet Respir Med 2020, Published Online April 6, 2020

# Initial approach to critically ill patients with suspected COVID-19

**Severe acute respiratory illness and any of the following:**
**A. recent travel to or residence in a location reporting community transmission;**
**B. recent contact with a confirmed or probable COVID-19 case;**
**C. no alternative diagnosis that fully explains the clinical presentation**

↓

**Low threshold for suspecting COVID-19**

↓

**Full PPE for ICU staff**

↓

**Consider critical care triage to ration scarce resources in pandemic; prioritize patients who will benefit from ICU care**

↓

**Admit to single airborne infection isolation room with negative pressure in ICU**

↓

**If negative-pressure room unavailable, admit to normal-pressure single room in ICU**

↓

**If single room unavailable, cohort similar cases in shared room with beds spaced apart in ICU**

↓

**If ICU unavailable, consider surge beds outside of ICU**

↓

**If surge beds unavailable, consider transfer to designated hospitals and ICUs**

↓

**Collect respiratory tract samples for RT-PCR, preferably sputum or endotracheal aspirates**

↓

**If negative, repeat as appropriate based on index of suspicion**

Lancet Respir Med 2020, Published Online April 6, 2020

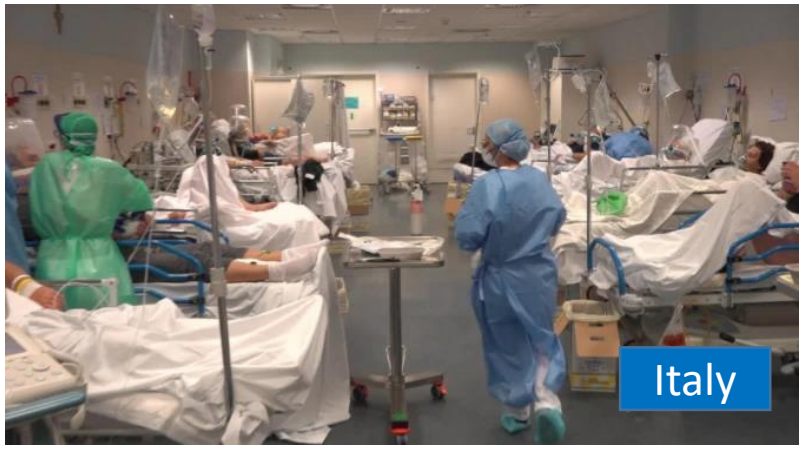
**Negative pressure ICU**


**Normal-pressure single room ICU**


**Similar cases in shared room ICU**


**Similar cases in shared room ICU**


**Surge beds outside of ICU**




**ER: consider transfer to designated hospitals**

# 新型冠狀病毒(COVID-19)感染重症照護暫行共識（重症、急加、胸重醫學會）

- 台灣目前有7300張重症病床，每10萬人約有31-32張重症病床的比例相較於世界各國算是相對資源充足
- 義大利每10萬人約有12-13張重症病床
- 德國每10萬人約有29張重症病床
- 美國每10萬人約有35張重症病床
- 醫院防疫措施上適當地管制人員進出、配置個人防護裝備和避免院內感染是**保存加護病房戰力**的重要前提
- 各院宜因地制宜擬妥最適應戰方案

# 降低加護病房需求

- 藉由快速反應小組(rapid response team)和醫療緊急小組(medical emergency team)**及早處置在病房病情惡化的病人**，也有機會降低病人入住加護病房的需求。
- **召開安寧緩和醫療家庭諮詢**，讓疾病不可治癒且死亡不可避免的病人能轉成緩和醫療，不入住加護病房或轉出加護病房，也能降低加護病房需求。
- **取消術後需住進加護病房病人的非緊急常規手術**，並暫停相關手術的未來排程。這需由外科、麻醉、手術室、加護病房和護理團隊共同協商討論取消手術及暫停排程的優先順序。
- 部分外科手術病人可**延長在術後恢復室的觀察時間**，也能降低加護病房的需求。
- 可**適當轉介**非新型冠狀病毒感染的重症病人至非新型冠狀病毒感染重症病人專責醫院的加護病房，降低新型冠狀病毒感染重症病人專責醫院的加護病房需求。

新型冠狀病毒(COVID-19)感染重症照護暫行共識（重症、急加、胸重醫學會）

# 擴充加護病房數量

- 在大規模常規手術停止的情況下，**部分術後恢復室可考慮暫時改成加護病房**，增加加護病房數量。
- 必要時可考慮徵用**麻醉機**和修復先前庫存的**舊呼吸器**。
- 將部分**病房提升醫護人力**、**監視設備**和**重症醫療**資源**升級成亞急性病房**，可將部分嚴重度較低的**非新型冠狀病毒感染重症病人**轉出至亞急性病房，可空出一些重症病床來救治新型冠狀病毒感染重症病人。
- 必要時由政府協調自非專責醫院**徵用呼吸器、輸液幫浦、洗腎和相關重症設備**。

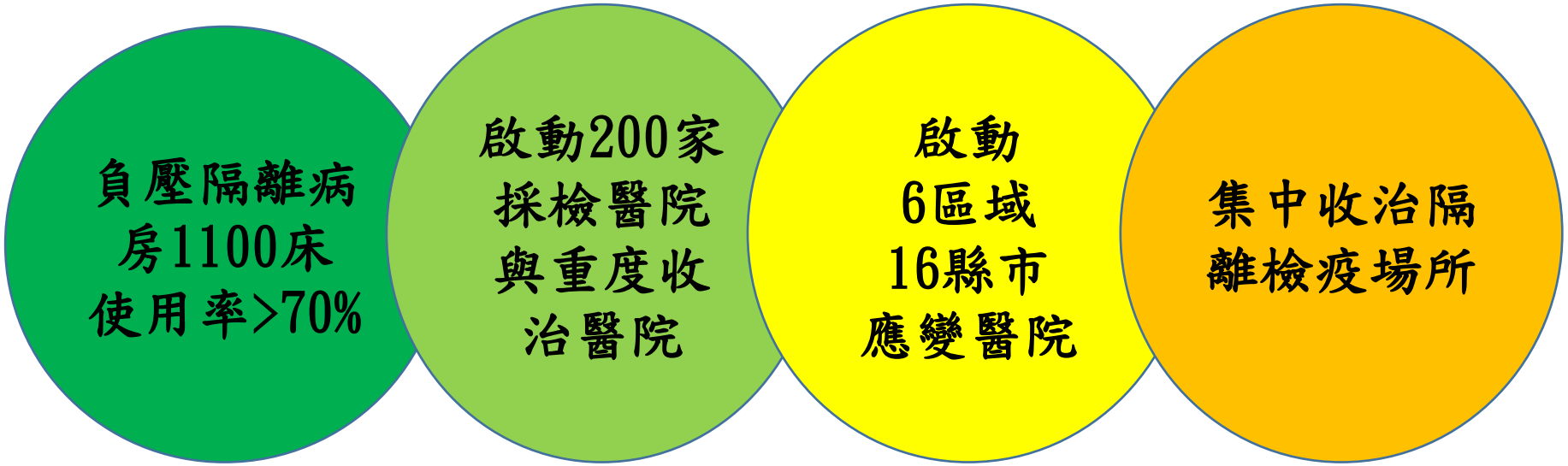
新型冠狀病毒(COVID-19)感染重症照護暫行共識（重症、急加、胸重醫學會）

# 增加加護病房醫療人力

- 資深**醫師**如有**加護病房照護經驗**，可由政府補助**徵調支援**加護病房。
- **普通病房和門診的護理師**具有加護病房照護**經驗**，可由政府補助**徵調支援**加護病房。
- 疫情嚴峻時，可由政府**徵調普通病房的醫護人力施予短期訓練**，在重症醫護人員協助指導與監督下與加護病房的原有人力混合編組上班，。
- 必要時由政府立特別法及補助自非新型冠狀病毒感染重症病人專責醫院徵調有加護病房經驗的醫師、護理師、呼吸治療師、藥師、營養師和社工**跨院區支援**重症專責醫院。

新型冠狀病毒(COVID-19)感染重症照護暫行共識（重症、急加、胸重醫學會）

# 台灣醫療應變規劃




109.04.07. 新聞稿

# 指揮中心：六大策略擴充醫療整備

- 一、**擴大檢驗**。建置「嚴重特殊傳染性肺炎」指定檢驗網絡，全國共有34家指定檢驗機構，分布於北(16家)、中(7家)、南(10家)、東(1家)四區，每日最大檢驗量能可達3800件，提供在地化檢驗模式，提升檢驗時效。
- 二、**社區監測**。規劃**輕、重症患者分流**的診療流程，訂定基層診所分流轉診程序，其中指定疑似新冠病毒感染個案社區採檢院所共計163家；指定疑似新冠病毒感染重度收治醫院共計52家。
- 三、**擴大收治**。啟動應變醫院及專責病房四階段整備策略，擴大收治量能：**應變醫院**針對非武漢肺炎病人儘量集中收治，空出病房區，**擴大設置專責病房**，以利需要時可立即依中心指揮官或區指揮官指示收治，並依四階段應變作為進行預備作業。

109.04.07. 新聞稿

# 指揮中心：六大策略擴充醫療整備

- 四、**盤點病床**。掌握全國重症收治量能：截至4月3日，全國負壓隔離病床數共計970床，空床數計417床；普通隔離病床數共計958床，空床數計548床；專責病房共計病室數1,711床，空床數計1,177床。醫療網指定醫院全面清空，共計病室數20,985床。**呼吸器共計9,932台**，剩餘1,300台可使用。
- 五、**持續徵用**。擴大集中檢疫場所量能：持續徵用各部會之宿舍、訓練中心、營區等，已開設的集中隔離檢疫場所共計13個，共計房間數1,553間。
- 六、**分流轉送**。訂定COVID-19病人住院分流分艙及雙向轉診原則，以落實適當病人安置：落實住院病人分流分艙，**強化重度及輕度病人雙向轉診機制**，提供醫院針對住院病人之「住院前分流」及「住院後轉送」依循辦理。

109.04.07. 新聞稿

# 醫療院所因應COVID-19(武漢肺炎)疫情持續營運指引(草案)

## 廣泛性社區感染(感染機率大增，社區皆存在感染風險)
## 建議醫療院所之因應策略:

- **限制特定區域移動與資源調度。**
- **醫療院所整備：**
- 配合中央疫情指揮中心成為**徵用緊急應變或隔離醫院**，並安排啟用病房之順序，及配合辦理**轉診**或**收治無症狀/輕症/重症**確診者個案。
- 配合成為徵用之**緊急應變或隔離醫院**後，禁止非醫療人員進入醫院、**取消醫院門診業務**，規劃設置社區防疫門診，配合中央疫情指揮中心指示**將非傳染性病人轉移至指定之其他醫療院所**。
- 暫緩非緊急醫療服務，**減縮不必要之醫療服務**。

# 廣泛性社區感染(感染機率大增，社區皆存在感染風險)建議醫療院所之因應策略

- **人力運用整備：**
- 配合中央疫情指揮中心，適時啟動即時**調度醫療備援人力**。
- **啟動行政單位工作人員分時辦公或在家上班之出勤方式**，減少員工間交互傳染；員工上下班差勤規定，請依勞動基準法相關規定辦理。
- 配合政府防疫政策，取消院內工作人員國內、外出差行程。
- 規劃中央疫情指揮中心調派邊境檢疫和集中檢疫場所所需人力之替代方案(如**鼓勵院內退休醫護人員志工**，並將完訓的志工團隊進行任務編組，協助解決所需之人力資源)。

# Conclusion

- Implement national and regional modelling of needs for intensive care
- Make plans for an increase in capacity, including providing intensive care in areas outside ICUs
- Reduce the inflow of patients who do not urgently require intensive care (eg, by postponing elective surgeries)
- Consider transport, operating theatre, and military ventilators for MV shortage
- Make plans for augmentation of staff from other ICUs or non-ICU areas, and provision of appropriate training
- Minimise risk of infection; consider segregation of teams and physical distancing to limit unprotected exposure of multiple team members
- Consider implementing a triage policy that prioritizes patients for intensive care and rations scarce resources
- **Reassure staff through infection prevention measures, and safe rest areas**

八仙塵爆 499人

加護病房病患 221人

全國燒傷加護病房僅145床

52家醫院參與救治

ICU死亡率 6.8%

# Work Safe and Save More

Thanks for your attention