Patient safety & COVID-19 in South Korea

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Current Covid-19 in Korea

**Cases in Korea** (as of 12am on May 07, 2020, data aggregated from January 3)

- **Confirmed Cases** (accumulation) = 10,810
- **Released from isolation** (Released from Quarantine) = 9,419
- **Isolated** = 1,135
- **Deceased** = 256

Daily Change: +4

**Testing in Korea** (as of 12am on May 07, 2020, data aggregated from January 3)

- Tests Performed: 649,388
- Tests Concluded: 640,959
- Positive Rate: 1.7%

Legend:
- **confirmed cases**
- **deceased**
- **released from isolation**
Eunpyeong St. Mary’s Hospital

- only university hospital in this area
- opened at Apr 1, 2019

Seoul
Capital city of Korea
24 boroughs
Population: 9,736,962

Eunpyeong-Gu
Northwest part of Seoul
Population: 478,019
Eunpyeong St. Mary’s Hospital

Organ Transplantation within 100 days after opening

1. Kidney transplantation
   - 05-Apr 2019
   - 27-Jun 2019

2. Heart transplantation
   - 05-May 2019

3. Liver transplantation
   - 15-Jun 2019

4. Cornea transplantation
   - 01-Jul 2019

5. Pancreas transplantation
   - 03-Jul 2019
**Eunpyeong St. Mary’s Hospital**

<table>
<thead>
<tr>
<th>Permitted Beds</th>
<th>Types</th>
<th>No. Beds</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 beds in a room</td>
<td>672 beds/168 rooms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIP room</td>
<td>33 beds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Isolation room</td>
<td>35 beds</td>
<td>5 negative pressure rooms</td>
</tr>
<tr>
<td></td>
<td>Room for HSCT</td>
<td>2 beds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICU</td>
<td>64 beds</td>
<td>MICU 12, SICU 10, CCU 10, NCU 14, PICU 3, NICU 15 (3 negative pressure rooms)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>778 beds</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operation rooms</td>
<td>19 rooms</td>
<td>1 or 2 negative pressure rooms</td>
</tr>
<tr>
<td></td>
<td>Emergency medical center</td>
<td>36 bed</td>
<td>2 negative pressure rooms</td>
</tr>
</tbody>
</table>
Eunpyeong St. Mary’s Hospital

- Most common type of hospital room (4 beds in a room)
- Most patients cared by caregiver by hired by themselves
Total closure of hospital

• Period: Feb 21, 2020 ~ March 8, 2020 (17 days)
• Cause: 4 cases of Covid-19 diagnosed in the respiratory diseases ward
  - 2 community acquired Covid-19 patients (#1, #2) in the respiratory disease ward who admitted in early & mid Feb.
  - 1 hospital staff (transporter of patients)
  - 1 caregiver of other patient in the same room of patient #1
Hospital staff responsible for transporting patients → Father

Outside hospital → Inpatient 1

Outside hospital → Inpatient 2

Diagnosed inside of the hospital

Care giver of other patient (same room with inpatient 1) → Wife

Discharged patient 1 (History of admission within 2wks from diagnosis) → Wife

Discharged patient 2 (History of admission within 2wks from diagnosis) → Husband

Caregiver (History of hospital stay within 2wks from diagnosis)

Visitor (?) (History of 1day visit within 2wks from diagnosis)

Diagnosed outside of the hospital

High risk of transmission
Possible transmission route
During closure

- Every event was controlled by Covid-19 response headquarter (composed of government and hospital members)
- RT-PCR was done for all in-patients, health-care personnel, other employees, and caregivers of each patient
- Application of enhanced infection control practice by KCDD guidelines
- In-patient management (including caregivers)
- Management of all employees
- Development of treatment protocols for suspected or confirmed cases in various departments
- Prepare the ward for Covid-19 confirmed patients
- Education of hand hygiene, PPE and new guidelines
- Mock training for various situation
RT-PCR for all in-patients & employees after detection of Covid-19 patients in hospital

1st COVID-19 patient diagnosed inside hospital

Hospital closure

Starting complete enumeration survey of all patients

Starting complete enumeration survey of entire hospital employees

Confirmed all hospital employees’ results were NEGATIVE

Confirmed all other patients’ results were NEGATIVE
New protocols

Ex) Route of suspected (blue) & confirmed (red) cases to operation room
### Hemodialysis room

**New protocols**

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>- Appropriate PPE (Level 5, N95 mask, gloves, eyewear)</td>
</tr>
<tr>
<td>Equipment</td>
<td>- Ensure all equipment is clean and functional</td>
</tr>
<tr>
<td>Procedure</td>
<td>- Follow standard disinfection protocols</td>
</tr>
</tbody>
</table>

### Operation room

**New protocols**

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>- Use proper PPE (Level 3, mask, gloves)</td>
</tr>
<tr>
<td>Equipment</td>
<td>- Regular maintenance and calibration of equipment</td>
</tr>
<tr>
<td>Procedure</td>
<td>- Implement aseptic techniques</td>
</tr>
</tbody>
</table>

### Angiography room

**New protocols**

<table>
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<tr>
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<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>- Strict adherence to aseptic technique</td>
</tr>
<tr>
<td>Equipment</td>
<td>- High-tech equipment for minimal invasiveness</td>
</tr>
<tr>
<td>Procedure</td>
<td>- Minimize patient radiation exposure</td>
</tr>
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**Ankang Hospital - CoRona-19 Infecution Control Process**

**Inpatient Admission Process**

1. **Initial Assessment**: Review patient’s medical history, symptoms, and risk factors for COVID-19.
2. **PPE Requirements**: Ensure all staff wear appropriate PPE (Level 3, mask, gloves).
3. **Isolation Procedures**: Place patients in single rooms and limit movement to reduce exposure to COVID-19.
4. **Regular Monitoring**: Monitor patient for signs of infection and adjust care based on symptoms.

**Discharge Process**

1. **Criteria for Discharge**: Patients must meet specific criteria related to symptom resolution and negative test results.
2. **Follow-up**: Provide recommendations for continued self-monitoring and follow-up care.
3. **Transportation**: Coordinate safe transportation options for patients who are discharged.

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**Emergency Department Process**

1. **Alert System**: Implement a rapid alert system to quickly notify staff of potential COVID-19 cases.
3. **Personal Protective Equipment**: Ensure all staff are well-equipped with appropriate PPE (Level 3, mask, gloves).

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**ICU Process**

1. **Staffing**: Increase staffing levels in the ICU to handle potential surges in COVID-19 patients.
2. **Ventilation Protocols**: Implement specific ventilation protocols to mitigate transmission risks.
3. **Surveillance**: Regularly monitor ICU patients for signs of infection and adjust care as needed.
4. **Discharge Planning**: Develop discharge plans with clear criteria for patient transfer to the appropriate setting.

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**Outpatient Department Process**

1. **Appointment Scheduling**: Prioritize patient appointments to minimize wait times and reduce exposure.
3. **Sanitization**: Regularly sanitize common areas and public Waiting areas.
4. **Mask Mandate**: Enforce masking requirements for all staff and patients.
After reopening – at OPD

• Questionnaire before enter the hospital by KIOSK or written form
• Check body temp. before enter
• Screening clinic (triage) for Covid-19 (neg. pressure facility)
• Respiratory disease clinic for patient who has not infected or not suspicious of Covid-19 (neg. pressure facility)
• Usual care who has no epidemiological relevance and no Covid-19 associated symptoms
• Code APPLE for alert and prompt response at OPD who has fever or respiratory symptoms found at out-patient zone or laboratory area
Questionnaire for foreigners

For COVID-19 Visitor Questionnaire  Updated as of April 23, 2020

The safety of our patients, our employees and visitors remain Our Lady of the Wayside Hospital’s overriding priority. As the coronavirus disease 2019 (COVID-19) outbreak continues to evolve and spread globally, Our hospital is monitoring the situation closely and will periodically update hospital guidance based on current recommendations from the Korean Centers for Disease Control and Prevention.

Pursuant to Article 11 and Article 76-2 of the Act on the Prevention and Management of Infectious Diseases (information request, etc.), personal information of patients and their guardians is as follows for prevention of new coronavirus infection, prevention of infection transmission, epidemiological investigation, etc. We want to collect, use and provide it to third parties.

1. Have you experienced cold or flu-like symptoms?
   A. Fever (≥ 37.5°C) Yes - body temperature, No - No
   B. Do you have any fever reducer? Yes - No
   C. Do you have respiratory symptoms? Yes - Cough, difficulty breathing, No - No
   D. Do you have symptoms of loss of smell or taste? Yes - No

2. Have you or your close relatives returned from anywhere in the country or been hospitalised at a hospital of domestic collective outbreak areas (Seoul, Gyeonggido) or during Medical Center within the last 14 days?
   Yes / No

3. Are you or your children a Hollywood superstar? Yes - No

4. Have you or any of your close relatives had close contact with or cared for someone diagnosed with COVID-19 within the last 14 days? Yes - No

Personal information shall be collected and used without the consent of the information subject pursuant to Article 11 (1) of the Personal Information Protection Act.

The above information was written by us in English and you can take legal responsibility for this facts and we will discard it after achieving the purpose of use.
Checking body temp.
Triage for COVID-19
Respiratory disease clinic (temporary)

- Inside the hospital building
- Negative pressured facility of whole area
- Prepared for infectious diseases patients from the design stage
After reopening – at wards

• Pre-admission RT-PCR & chest PA within 72 hr before admission
• Ward for patients who has respiratory diseases with negative Covid-19 RT-PCR
• Permitted only 1 caregiver who tested RT-PCR
• No in-patient visits
• In-patient management (including caregivers) who has new fever or respiratory symptoms or pneumonia
  - immediately isolate and RT-PCR and chest X-ray again
Ward for Covid-19 confirmed patients

• 4 negative-pressure single rooms (with anteroom) in restricted ward
• Educated and dedicated medical staff
• 5 patients (4 discharged, 1 in hospital) treated
• Educate and monitoring donning & doffing of PPE
• Enforced management of environment
• Periodic RT-PCR and antibody test for health-care personnel
After reopening – employees

• Wear mask properly! Always!
• Wash hands as frequently as you can!
• Immediate report if fever or respiratory symptom
  - exclude from work and test (RT-PCR & chest PA) at triage clinic promptly
• Repeat educate and training
• Postpone or stop all conferences in the hospital
• Keep social distancing out side the hospital
PPE education & mock training

03.04 83병동
02.25 미화협력업체

보안요원
E/V 15호기 통제

미화
환자 동선 및 E/V 소독, 환기

03.09 교원 및 교직원
03.05 수술 & 마취간호

83병동
E/V 15호기 → 83병동 응급의료실로 입실
After reopening - monitoring

• ICC (Infection control coordinator) working group
  - hospital rounding 2 times per week
  - monitoring performance of new protocols, enforced infection control practice etc.
  - feedback to each dept. and monitoring improvement
After reopening – environment manage

• Cleaning and disinfection by KCDC guideline
Dilemma - patients

• Reluctant to visit the hospital due to excessive concern about the risk of Covid-19
  → Treatment of severe, urgent illness maybe delayed
• Resistance or complaints about the RT-PCR test for hospital use
• Not permitted caregiver
  → As in Korea, the likelihood of accidents in hospitals increases in hospitals that require caregiving by guardians.
• Telemedicine
  → Certain parts are helpful for patient care and patients are satisfied, but safety needs to be systematically supplemented.
Survey target: telemedicine serviced during total closure

Patients (n=906): 87% satisfied
Doctors (n=155): 14% satisfied

http://www.donga.com/news/article/all/20200502/100883349/1
Dilemma – hospital workers

• Increased fatigue
  - Combine their professional work with circular work (eq. triage clinic)
  - Heavier education schedule about new protocols & guidelines
  - Not permitted academic meetings
• Anxiety about being infected during work in hospital
• Worry about their family members esp. who works in the Covid-19 ward
• More strongly recommended social rules than general population
• Not enough support for their mental, financial and physical support
Dilemma – hospital executives

• How to supply the necessary medical equipment without shortage
  - some PPEs are breathtaking esp. N95 mask, long-sleeve gown
• How to overcome financial difficulties in hospital management, in particular, temporarily closed hospital
• How to boost employee morale in a stagnant atmosphere
• How to keep and promote hospital's safety
• How to prepare the coming 2\textsuperscript{nd} wave
  - making and managing more safe zone in the hospital &
  - hire and train more specialized staff for emerging infectious diseases