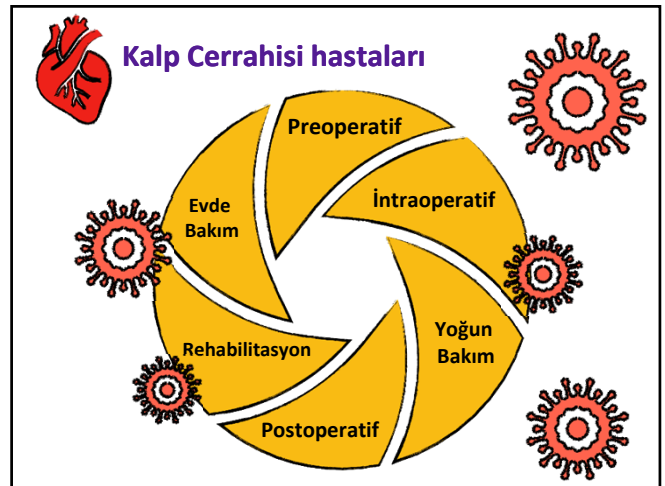
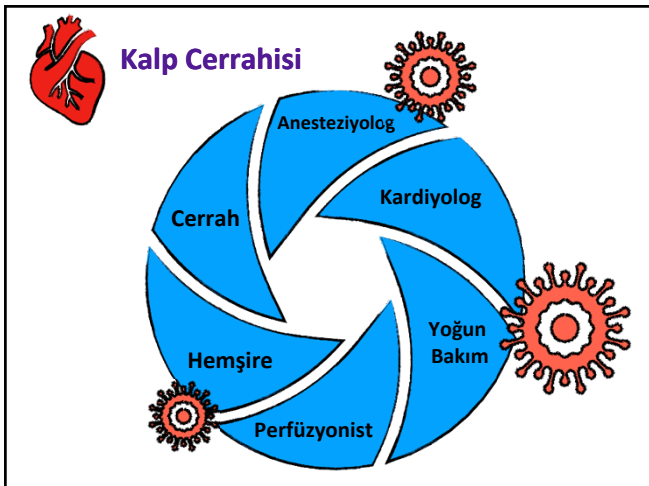
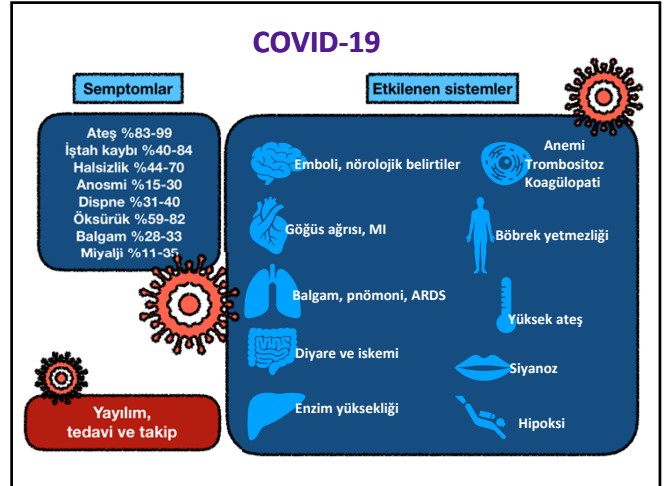
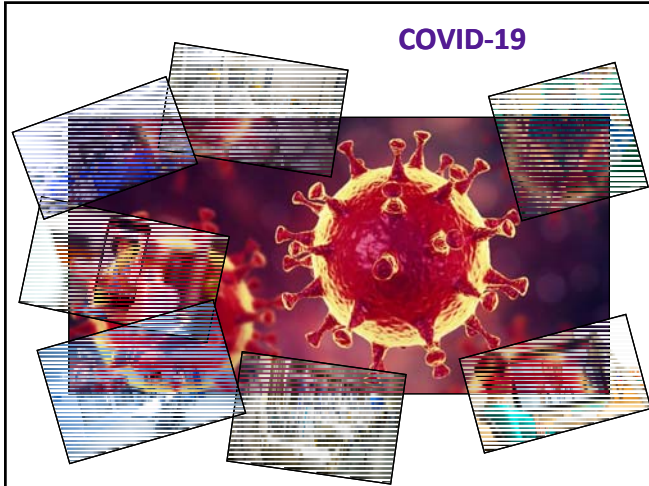
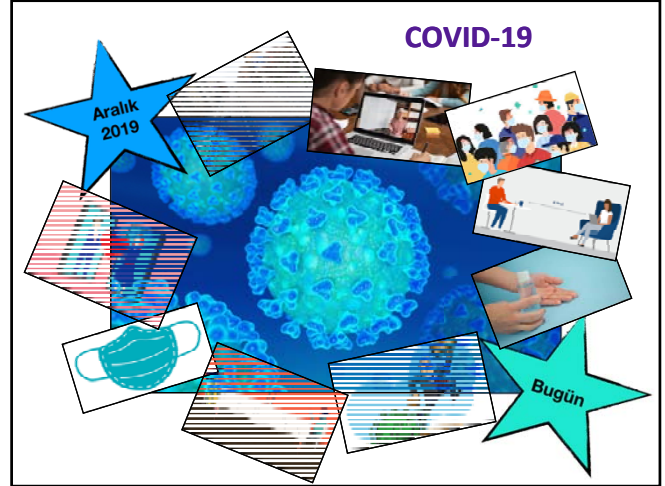



COVID-19 Pandemisinde Kalp Cerrahisi ile ilgili neler deneyimledik?



Dr. Bahar ÖÇ

Selçuk Üniversitesi Tıp Fakültesi Anesteziyoloji ve Reanimasyon AD.





Kalp Cerrahisi ve COVID-19

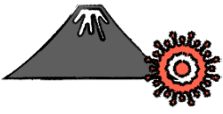
- Zorluklar
- Güvenlik
- Mükemmellik
- Çözümler
- Yeni dönem
- Stratejiler



OPERASYONLARIN ÖNCELİKLENDİRİLMESİ


Önceliklendirme!

- Sınırlı sayıda cerrahi
- "Vaka seçimi"
- "Triyaj"



- Bekleme listeleri
- Listelerin yeniden ele alınması
- Planlama
- Koruyucu önlemler
- Bakım sürecinin verimliliği
- Postoperatif enfeksiyon

Hukuksal süreçler



COVID-19: Elective Case Triage Guidelines for Surgical Care


1) **Emergent and urgent procedures**— those procedures that are deemed time sensitive as delaying the procedure would cause harm to the patient.

2) **Elective and non-urgent procedures**— those procedures that can be rescheduled to a later time as the timing of these cases is flexible and is unlikely to significantly impact the patient's health outcome.

ACS Elective Surgery Acuity Scale


Tier	Acuity	Health Status
Tier 1	Low acuity surgery	1a - healthy patient 1b - unhealthy patient
Tier 2	Intermediate acuity surgery	2a - healthy patient 2b - unhealthy patient
Tier 3	High acuity surgery	3a - healthy patient 3b - unhealthy patient

Elektif Acil olmayan İvedi Acil



ACC Cardiac Surgery Acuity Scale


Tier	Definition	Acuity Status
Tier 1	Asymptomatic MI / TIA Atrial septal defect / patent foramen ovale Isolated atrial fibrillation	Low
Tier 2	Symptomatic MI / TIA Asymptomatic aortic aneurysm with demonstrated stable size Hypertrophic obstructive cardiomyopathy Chronic thromboembolic pulmonary hypertension Pericardial constriction	Intermediate
Tier 3	CAD with stable angina Symptomatic AS Aortic aneurysm with risk factors Asymptomatic cardiac tumor	High
Tier 4a	CAD with large territory of myocardium at risk, reduced EF, progressive angina Coronary vessel with obstruction or embolism Heart failure patients awaiting transplant or VAD Infective endocarditis with uncontrolled infection or embolism Infected or dysfunctional prosthetic / ASD / LVAD	Urgent
Tier 4b	Treatment within 48 hours CAD with heart failure (AHA/ACC) Acute coronary syndrome with mechanical complications (VSD, MR, rupture) Acute valvular regurgitation with heart failure Infective endocarditis with heart failure Aortic dissection or contained rupture	Very Urgent
Tier 5	Immediate treatment Acute type A aortic dissection Acute type B aortic dissection with rupture / malperfusion Acute, massive pulmonary embolism Penetrating aortic/vascular trauma Acute cardiogenic shock (CSG)	Critical



Kalp cerrahisini beklerken


Medikal tedavi uygulamaları

- Telehealth, telemedicine
- Telefon
- Video konferans





- Modern sanal teknoloji
- Semptomların ilerlemesi
- Kardiyak görüntüleme

- Klinik kötüleşme
- Ani kardiyak ölüm
- Agresif izlem




Kalp cerrahisini beklerken

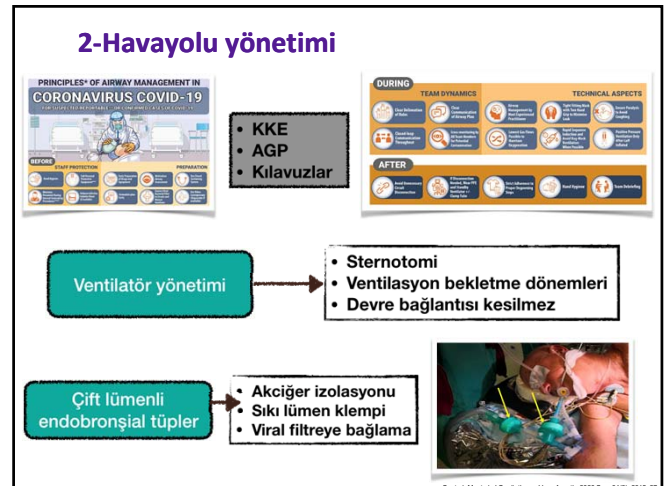
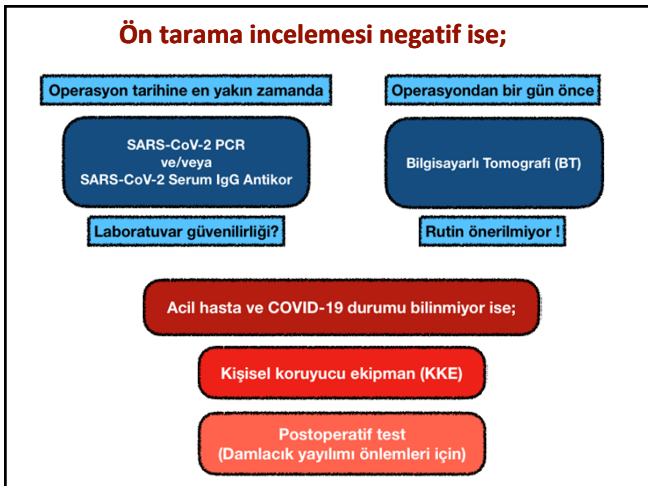
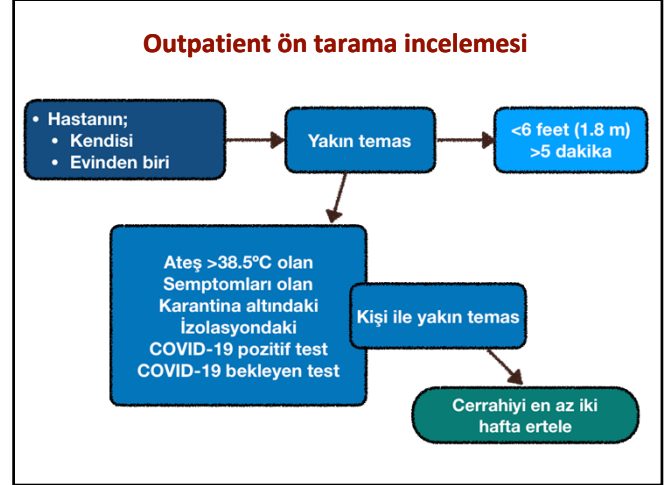
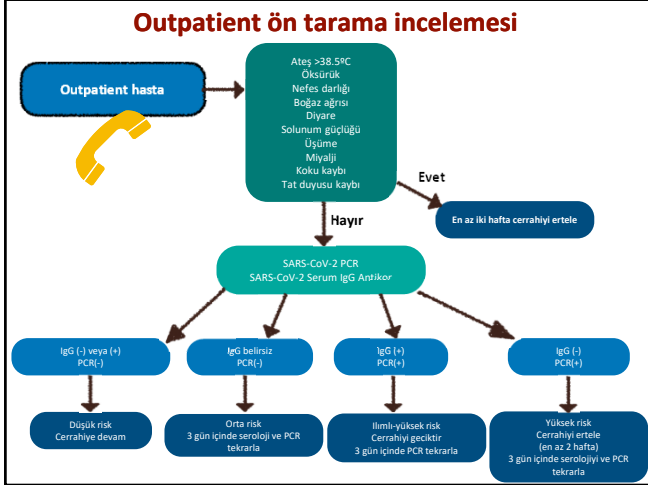
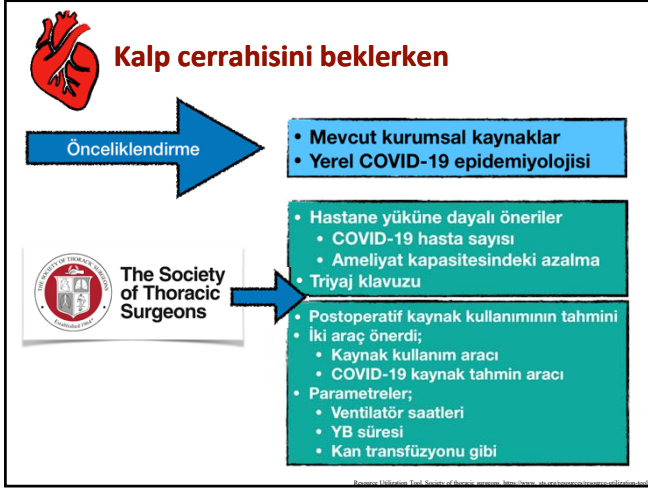
- Düzye 4 ve 5 için;
- YB yatak sıkıntısı
- Bakım sorunları
- Katater bazlı tedavi
- Az stresli merkeze transfer

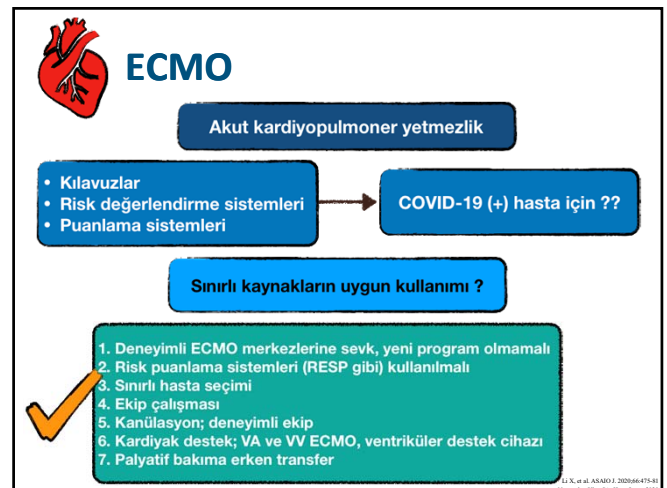
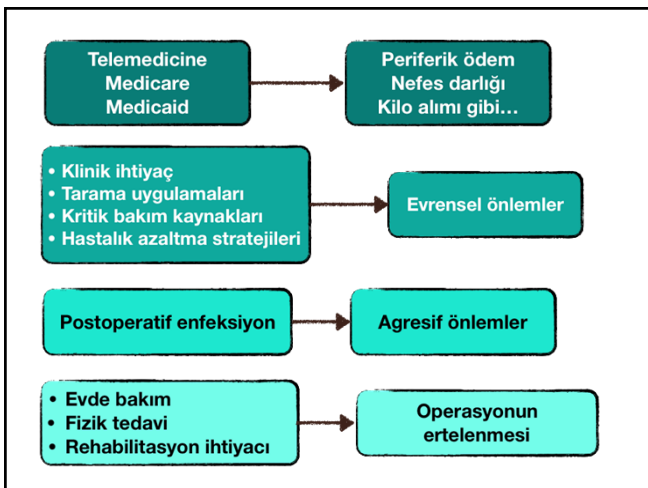
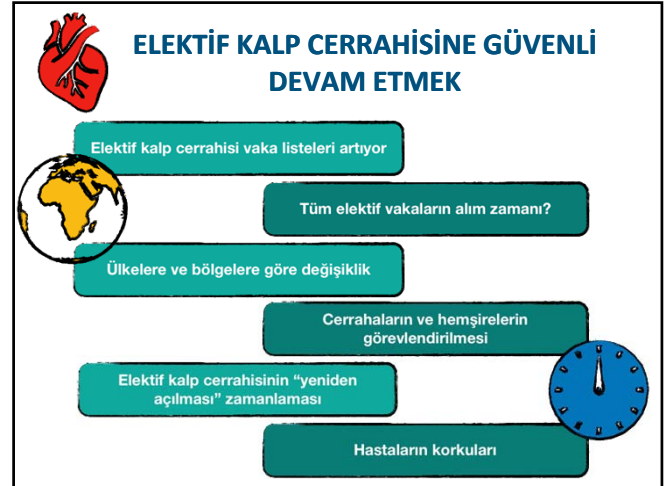
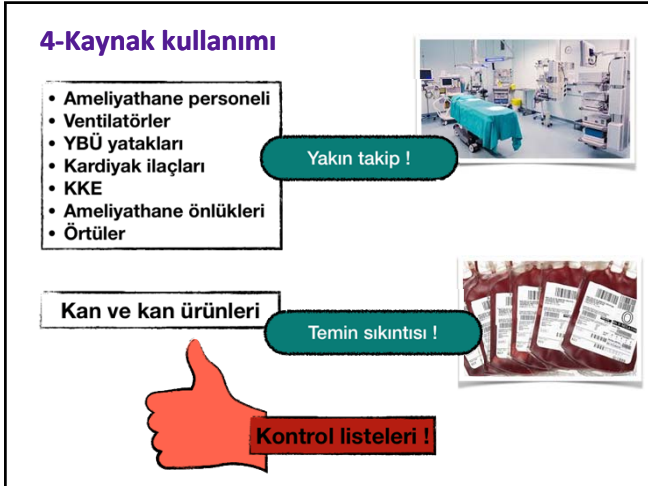
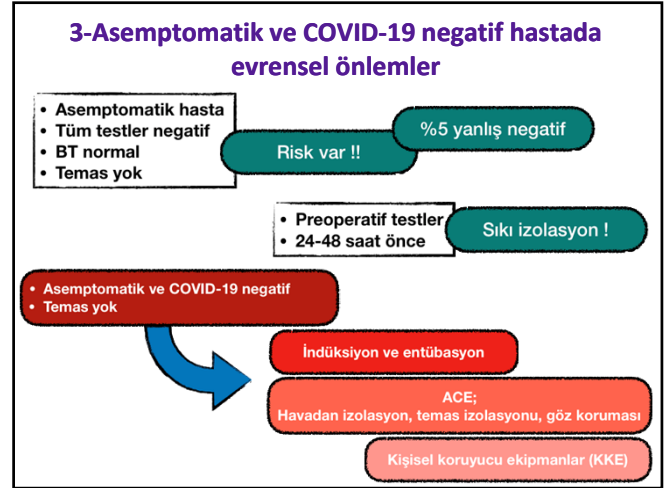
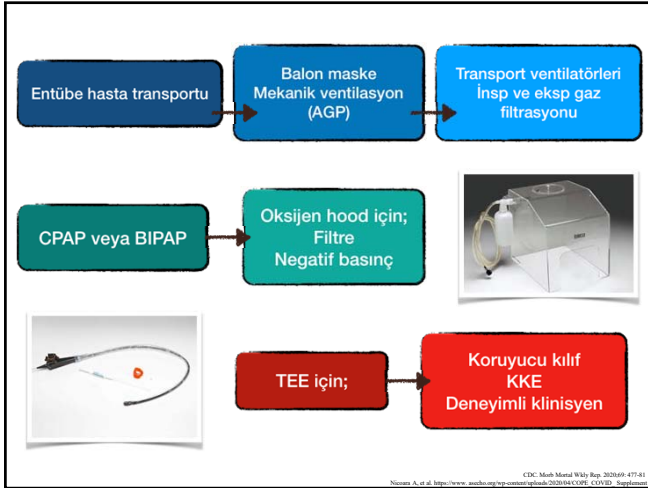



- Girişimsel Kardiyoloji Konyesi
- Koroner
- Yapısal kalp hastalığı

- Torakoabdominal aort hastalığı
- Endovasküler tedavi
- YB kaynakları







ECMO in COVID-19

Extracorporeal Life Support Organization Coronavirus Disease 2019 Interim Guidelines: A Consensus Document from an International Group of Interdisciplinary Extracorporeal Membrane Oxygenation Providers

Pulmoner ve kardiyak destek

ECMO; gerekli tedavilerin yerine geçmez

COVID-19	COVID-19	COVID-19
cases	cases	cases
2451	2442	975/1796 (44%)

COVID-19 ECMO counts by ELSO Chapter

North America	1564
Europe	365
Asia-Pacific	31
Latin America	117
EMEAAC	159

- Entübe hastalar >%90
- Entübasyon-ECMO arası <4 gün
- VV-ECMO
- Böbrek yetmezliği %25
- ECMO süresi 8 gün

Barclay RL, et al. ASAIO J. 2020;64(1):47-54
Tucker BT, et al. ASAIO J. 2020;64(1):77-82

Patient selection for ECMO in COVID-19

Acute respiratory failure

- $PaO_2/FiO_2 < 80$ mm Hg for >6 h
- $PaO_2/FiO_2 < 80$ mm Hg for >3 h
- $pH < 7.25$ with $PaCO_2 > 60$ mm Hg for >6 h

Failure of "salvage" therapies

- Prone ventilation (1-2 trials)
- Inhaled nitric oxide or epoprostenol
- High-*peep* (>15 mm Hg)
- Trial of neuromuscular blockade

Consideration for criteria that has been associated with a worse prognosis*

- Unfavorable RESP score (†)
- Prolonged mechanical ventilation (ie, >7 d)
- Baseline comorbidities that might also preclude "meaningful" survival from COVID infection independent from ECMO
 - Active cancer, liver disease, poor functional status. Severe COPD (ie, home oxygen)
 - Advancing "relative" age (ie, >65 y/old)
- Refractory shock (septic, cardiac) with lactate >10 mmol/L
- Pre-ECMO cardiopulmonary arrest

KALP TRANSPLANTASYONU

Hangi hastalar kalp nakli için uygun? Vericinin riskleri Alıcının riskleri

The Society of Thoracic Surgeons

AST AMERICAN SOCIETY OF TRANSPLANTATION

UNOS UNITED NETWORK FOR ORGAN DONATION

Triyaj sistemi
Hasta seçimi?
LVAD tedavisi başarısız
Komorbiditelerin varlığı
Sosyal statü?

Engelmann DT, et al. Ann Thorac Surg. 2020;100(4):497(2):391-397
Kotamraju SR, et al. AJOT. 2020;30(2):123-128

- İki kez negatif PCR
- 14 gün semptomsuz
- Belirti taraması
- 14 gün COVID-19 maruziyeti olmamalı

Alıcı

- PCR
- Toraks BT

Donör

Enfeksiyon riskini azaltmak için "ayrı harvesting" ekibi

KKE; her iki ekip için

Kardiyak derlenme; cerrahi maske yeterli
Akciğer transplantasyonu da varsa N-95

Winkel R, et al. Voxa. 2020;51:484-9
Xiao AT, et al. Clin Infect Dis. https://doi.org/10.1093/cid/ciaa60

İmmünsüpresyon ?

Wuhan

- Aralık 2019-Şubat 2020
- 87 kalp nakli
- 4 hasta respiratuar enfeksiyon

İmmünsüpresyonun COVID-19'a yanıtı ?

Li F, et al. J Heart Lung Transplant. 2020;39:418-9
Bain JZ, et al. J Heart Lung Transplant. 2020;39:412-5

KONJENİTAL KALP CERRAHİSİ

Multidisipliner yaklaşım

The Society of Thoracic Surgeons

CHSS Congenital Heart Surgeons' Society

2007-Özel kurul-Önlemler

NIH Public Access
Author Manuscript
Published in final edited form as:
"World J Pediatr Congenit Heart Surg. 2012 January 1; 3(1): 1-10. doi:10.1177/2150131911426702.

Quality Measures for Congenital and Pediatric Cardiac Surgery

2011- Onayladı

Quality Measures for Congenital and Pediatric Cardiac Surgery

1. Adherence to a National Database for Pediatric and Congenital Heart Surgery
2. Multidisciplinary team approach to care, including the medical and surgical team
3. Availability of intensive pediatric intensive care (PICU) support (2012 program)
4. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support, unless otherwise specified by the institution
5. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
6. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
7. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
8. Availability of intensive monitoring (telemetry, ECG) and appropriate interventions
9. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
10. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
11. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
12. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
13. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
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15. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
16. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
17. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
18. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
19. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support
20. Inpatient cardiac surgery performed during the day, with appropriate cardiac and pulmonary critical care support

Bekleme ve cerrahi zamanlama

Shahidi JP, et al. World J Pediatr Congenit Heart Surg. 2012;3:1-10

Semptomlar daha az


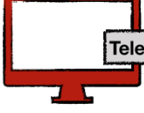

Siyanoz ve şanta bağlı lezyonlar

- Pulmoner enfeksiyondan etkilenecek hastalar;
- Yakın izlem
- Erken cerrahi

Respiratuar sinsityal virüs (RSV)

Telemedicine ile takip

Bekleme COVID-19 maruziyeti

Wang D, et al. JAMA. 2020;323(11):1094-4
Cao A, et al. Pulmono. 2020;14(4):20200814
Chen P, et al. J Intern Med. 2019;177

SONUÇ OLARAK;

Bilgi boşlukları


Kalp cerrahisi güvenliği

Bölgesel değişiklikler

Cerrahi tipine göre değişiklik

COVID-19 testlerinin güvenilirliği

- Düşük maliyetli
- Yaygın bulunan
- Yüksek duyarlılıkta
- Yüksek özgüllükte
- Hızlı



MI bağlı mekanik komplikasyonlar arttı mı?
MI azaldı fakat evde ölüm arttı mı?
Valvüler hastalıklarda ventrikül fonksiyonları kötüleşti mi?


- Dijital sağlık teknolojileri;
- Cerrahi öncesi
- Postoperatif takip

Uyarlanabilir

Süreklilik

Yenilikçi

Kalp cerrahisi

Yoğun bakım kaynakları

Kişisel koruyucu ekipmanlar

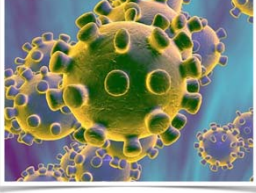
Elektif operasyonların ertelenmesi

Operasyon kararı

Yoğun ekip çalışması

Operasyonların yeniden başlanması

İvedi ve acil !



Kaybettiğimiz tüm sağlık çalışanlarımızı saygı ile anıyoruz...
Sağlıklı ve kayıpsız günler dileği ile...

