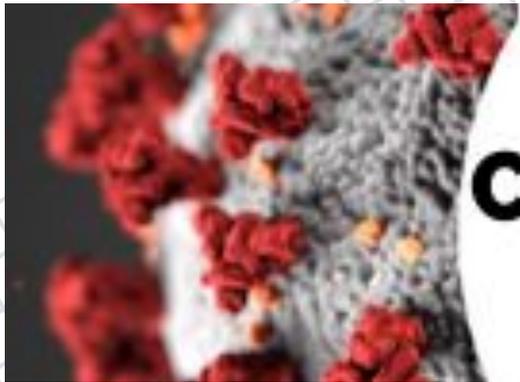


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# ESOT

LEADING THE WAY IN ORGAN TRANSPLANTATION



**COVID-19**

## Management of Transplant Programs during COVID-19 Pandemic



# PROGRAMME

## Management of Transplant Programs during COVID-19 Pandemic

Chaired by Maria Irene Bellini and Francesco Giovinazzo

18:00 – 18:02 Introduction by Luca Segantini, ESOT CEO

18:02 – 18:05 **Introduction by the Chairs**

18:05 – 18:55 **Experiences from different countries**

18:05 – 18:15 - Umberto Cillo, Italy

18:15 – 18:25 - Silvio Nadalin, Germany

18:25 – 18:35 - Taizo Hibi, Japan

18:35 – 18:45 - Peter Nickerson, Canada

18:45 – 18:55 - Saima Aslam, USA

18:55 – 19:05 - David Paredes, Spain

19:05 – 19:45 **Resources distribution**

19:05 – 19:15 - ICU point of view - Francesca Rubulotta, United Kingdom

19:15 – 19:25 - Transplant Surgeon point of view - Paolo Muiesan, United Kingdom

19:25 – 19:35 - Ethics point of view - Katrina Bramstedt, Australia

19:35 – 19:45 **Q&A**

19:45 – 20:00 **Conclusions**

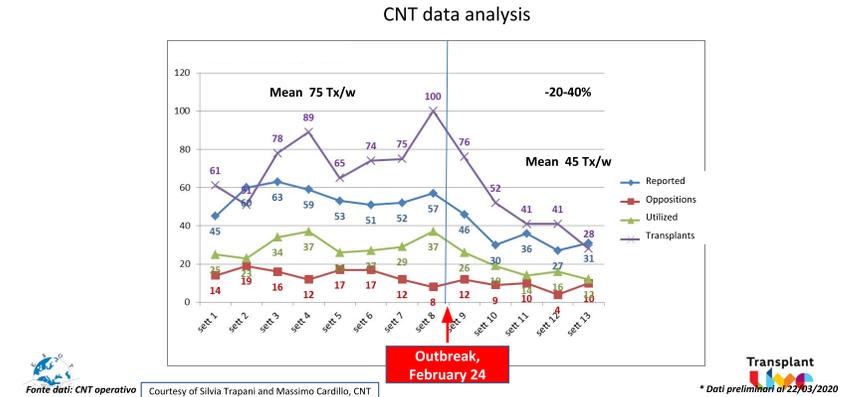


the webinar recordings will be available on  
<https://www.esottransplantlive.org/>



# Dr. Cillo (Italy) \*Transplant surgeon

- 12万4000人以上が感染、15000人以上死亡(死亡率12.3%)
- 臓器移植は全体で20-40%減(週75件→45件)
- 脳死ドナー: 3/30から全例で摘出24-48時間前のBAL洗浄液検査が必須
- 生体ドナー: 3/3から鼻咽頭ぬぐい液検査。疑い症例は最低28日間の延期
- 待機リスト患者:
  - ✓ 症状の有無に関わらずCOVID-19感染者と接触のあった全ての肝移植レシピエントは鼻咽頭ぬぐい液検査が必須
  - ✓ 無症状でCOVID-19感染者との接触がない場合は医師の判断
  - ✓ 生体のレシピエントは予定手術の72時間以内に検査



## ほとんどのイタリアの移植施設で

- LDKTを中止
- 臍移植を中止
- DDLTはCOVID-19感染が少ない施設、もしくは感作された患者を対象
- 移植直前に全例で鼻咽頭swab + CT全例
- 患者動線を分ける(手術室、ICU、病棟、外来、遠隔医療)
- Local procurementと業者による臓器搬送
- COVID-19+レシピエントの免疫抑制剤の減量
- 生体肝移植7施設中、3施設で閉鎖、1施設で数を制限、3施設は通常通り

### REAL LIFE (in most italian centers):

- 1) No Living donor kidney transplants
- 2) No Pancreas Tx
- 3) Cadaveric Kidney Tx only in less «engaged» Institutions or in Hyperimmune recipients
- 4) Life saving tx in selected cases
- 5) Swab + CT scan in recipients immediately before tx
- 6) SARS-Cov-2 free dedicated pathways (OR, ICU, Wards, Outpatient clinic, TELEMEDICINE!)
- 7) Local procurement and sent organs
- 8) Case by case donor-rec. matching analysis
- 9) Reduction of immunosupp (low CNI) and immunomodulations in COVID-19+ recipients

Living-Related Liver Transplant (LRLT)	
Total Number of Centers	7
Center Policy on Liver Transplantation, no (%)	
Regular activity	3 (43)
Reduced activity	1 (14)
Suspended activity	3 (43)

[http://www.trapianti.salute.gov.it/mqs/C\\_17\\_cnt/Avvisi\\_234\\_0\\_file.pdf](http://www.trapianti.salute.gov.it/mqs/C_17_cnt/Avvisi_234_0_file.pdf)

### SARS-CoV-2 Positive Patients in SOT Recipients out of 40531 alive SOT recipients (CNT data)

Age, COVID-19+ recipients	
Heart	67
Liver	63
Pancreas	47
Kidney	60
Lungs	56
Median age 61 yrs; Median 62 yrs	
Range (26-81)	

		Gender, COVID-19+ recipients						
		Heart	Liver	Lungs	Pancreas	Kidney		
F		1	2		1	31	35	23%
M		16	19	8	1	72	116	77%
Totale		17	21	8	2	103	151	

	Heart	Liver	Pancreas	Lungs	Kidney	
Deaths	6	1		2	9	18

Death Prevalence in SOT 14.8%, mean age 65 (vs 8% in age matched general population)

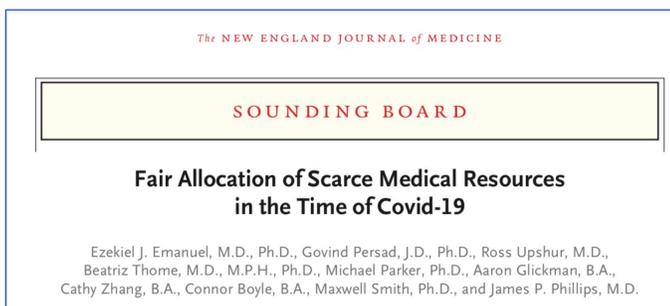
- イタリア全体で153/40351(0.37%)のレシピエント0.37%がCOVID-19+
- うち18名(半分にあたる9名が腎移植後)が死亡(死亡率14.8%)、平均年齢65歳→年齢をマッチさせると一般人口の倍の死亡率
- 待機患者8638名中88名(1%)がCOVID-19+、うち8名(9%)がすでに死亡

Transplant benefitに基づいた患者選択が重要: 肝ならhigh MELDかつ移植後早い回復が期待できる(=ICU stayが短期)患者が移植適応

## Dr. Nadalin (Germany) \*Transplant surgeon

- 95,391 COVID+患者 死亡率1.5%、プラトーに達しつつある
  - 有症状患者のみを検査→正確な疫学情報なし
  - 多くのテスト、早期入院、多くのICUベッド
  - 真のCOVID死亡率
  - 老年者のスクリーニングを始めたら死亡率は上がるであろう
  - ドイツ人の多くはルールを遵守
- 
- 臓器提供数は若干下がった程度 (ICUがCOVID-19+患者で占拠)
  - 全ての死体ドナーで鼻咽頭ぬぐい液PCRを施行
  - 胸部CTは必須ではない
  - COVID-19陰性が確認されるまで臓器幹旋・摘出は行われない

- レシピエントは症状の有無、接触歴、リスクの高い地域での滞在の有無などを調べた上で、鼻咽頭swab、胸部X線・CTが全て陰性の場合のみ移植へ
  - 肝の選択基準: 緊急度が高い、高いMELD、ICU入室が可能か
  - 腎: 脳死のみかつATGによるinductionが不要な場合
  - LDLTは緊急かつ脳死が不可能な場合のみ、LDKT中止
- 
- 医療者の感染予防は最優先事項の一つ



## Transplant Activity in Germany in Covid Era (Berlin, Aachen, Kiel, Mainz, Hamburg, Munich, , Münster, Tübingen)



- No national SOP but only suggestions (only single center SOP available)
- At the moment transplant activity still ongoing
- Common approach to organ recipient:
  - COVID-specific anamnesis: symptoms , contact with covid patients, risk area
  - If asymptomatic □ admission to tx center -□ covid swab PCR test + clinical investigation+ X-ray /CT lungs □ T: only in case of negativity (Cave! Logistic and Organisation according to Testas availability)
- Partial limitation of Tx activity according to ICU availability
  - **Liver:** HU, high MELD (to be discussed) vs clinical need. Triage according availability of ICU and planned ICU stay (NEJM)
  - **Kidney:** only DD avoiding ATG induction
- LDLT only in emergency cases when DD not available
- LDKT Stopped



<http://d-t-g-online.de/index.php/covid-19>



LEOSS register <https://leoss.net/>

- Since 23.03.2020, **patients after organ transplantation** can be entered in the **Europe-wide LEOSS register** with their specific aspects of immunosuppressive treatment (<https://leoss.net/>). As reported in our 2nd newsletter on the COVID-19 crisis, transplantation-specific data retrieval has been incorporated into the LEOSS registry **under the direction of DTG.**
- **Aim:** to identify and influence particular risk factors and groups of our patients under the ongoing pandemic



• Kidney paired donationは3/16 より最低6週間中止(感染拡大に伴いドナーの移動でCOVID-19のtransmissionが生じるリスク)

- 米国でドナーが出た場合は過半数の施設で受諾せず
- LDPT、LDKTは全て中止、DDKTは一部継続
- Highly sensitized patient: HSPに対しては症例ごとに判断、透析ルートがない医学的緊急性の高い症例(Medical Urgency: MU)は多くの施設で継続。
- LDLTは2施設をのぞいて中止、DDLTTは継続

ドナー基準:

- ✓ 14日以内にカナダ国外への渡航歴なし
- ✓ 感染を疑う病歴なし
- ✓ 鼻咽頭swab + BAL・気管内吸引 PCRでCOVID-19陰性
- ✓ 以前の判定で陽性なら鼻咽頭swab陰性を2回確認

レシピエント基準

- ✓ 14日以内にカナダ国外への渡航歴なし
- ✓ 感染を疑う病歴なし
- ✓ 鼻咽頭swab陰性
- HSPに対するDDKTはCPRA >99%、比較的若年の患者(60歳未満)、memory cellが存在せずdepletional induction therapyが不要な患者が選択基準
- 移植後のCOVID-19感染リスクについての十分なIC

• 適切なレシピエントの選択が重要

National Organ and Tissue Donation and Transplantation Operations - COVID-19

Transplant Programs Operational Status • Normal operations • Modified operations • On hold • Not applicable

Programs	Heart	Lung	Pancreas	Liver		Kidney				Accepting Out of Prov.	Accepting from US	
				DD	LD	DD	HSP	MU	LD			
Kidney Paired Donation Program												
BC BC Transplant - Adult	•	•	•	•	•	•	•	•	•	•	•	•
BC BC Transplant - Peds	•	•	•	•	•	•	•	•	•	•	•	•
ABE University of Alberta Hospital	•	•	•	•	•	•	•	•	•	•	•	•
ABE Stollery Children's Hospital	•	•	•	•	•	•	•	•	•	•	•	•
ABE Alberta Children's Hospital	•	•	•	•	•	•	•	•	•	•	•	•
ABE Foothills Medical Centre	•	•	•	•	•	•	•	•	•	•	•	•
SK St. Paul's Hospital	•	•	•	•	•	•	•	•	•	•	•	•
MB Health Sciences Centre	•	•	•	•	•	•	•	•	•	•	•	•
MB The Children's Hospital of Winnipeg	•	•	•	•	•	•	•	•	•	•	•	•
ON Hospital for Sick Children	•	•	•	•	•	•	•	•	•	•	•	•
ON Kingston General Hospital	•	•	•	•	•	•	•	•	•	•	•	•
ON London Health Sciences Centre	•	•	•	•	•	•	•	•	•	•	•	•
ON University Hospital and CHWO	•	•	•	•	•	•	•	•	•	•	•	•
ON The Ottawa Hospital	•	•	•	•	•	•	•	•	•	•	•	•
ON Ottawa Heart Institute	•	•	•	•	•	•	•	•	•	•	•	•
ON St. Joseph's Healthcare	•	•	•	•	•	•	•	•	•	•	•	•
ON St. Michael's Hospital	•	•	•	•	•	•	•	•	•	•	•	•
ON Toronto General Hospital - UHN	•	•	•	•	•	•	•	•	•	•	•	•
QC CHUM	•	•	•	•	•	•	•	•	•	•	•	•
QC CUSM	•	•	•	•	•	•	•	•	•	•	•	•
QC HMR	•	•	•	•	•	•	•	•	•	•	•	•
QC ICM	•	•	•	•	•	•	•	•	•	•	•	•
QC CHU Ste-Justine	•	•	•	•	•	•	•	•	•	•	•	•
QC IUCPQ	•	•	•	•	•	•	•	•	•	•	•	•
QC HDQ	•	•	•	•	•	•	•	•	•	•	•	•
QC CHUS	•	•	•	•	•	•	•	•	•	•	•	•
NS Queen Elizabeth II	•	•	•	•	•	•	•	•	•	•	•	•



Canadian Blood Services



Briefing Note  
Consensus guidance for organ donation and transplantation services during COVID-19 pandemic  
2020-04-03

Consensus guidance for organ donation and transplantation services during COVID-19 pandemic

Donor Criteria

- No travel outside Canada last 14 days
- Screening history negative
- COVID-19 negative by NP Swab & BAL/ETA
- If prior COVID-19 positive
  - Negative COVID by NP Swab x 2

Recipient Criteria (Selective)

- No travel outside Canada last 14 days
- Screening history negative
- COVID-19 negative by NP Swab
- cPRA >99%
- Younger (e.g. <60)
- Avoid those with major co-morbidities
- Avoid Depletional Induction Therapy
- Informed consent of post-transplant risk



Dr. Aslam (UCSD, USA) \*Infectious disease

- 4/5現在の感染者数311,536名、死者8499名
- NYが最大の感染地域
- 十分なPCR検査が行われていない

- LDKTが感染拡大地域で中止
- 可能な限りlocal recoveryを強く推奨

- PCR検査が行われるようになり待機リスト患者の増加に歯止めがかかり、かつinactivationが増えている

- 臓器斡旋の指針は各地域ごとのPCR検査実施態勢、結果が判明するまでの時間、手術室・ICUの利用状況、個人用防護具(PPE)の供給体制、COVID-19感染の蔓延状況に応じて定められる必要があり、一律ではない(かつ継続的に評価を繰り返す必要あり)

- UCSDでは生体移植は中止、DDLTはhigh MELDのみ、心・肺は全て継続、新規登録は重症度と予想待機時間に応じて判断
- 3/30より全てのレシピエントを対象に症状の有無、接触歴、渡航歴、臓器の種類(PCR結果が戻るまで12-24時間かかるため腎と腎以外で分けている)に応じた対応を開始(右図flow chart参照)
- これまでにないレシピエント選択基準であり、倫理指針が必要
- Transplant benefitに根ざしたレシピエント選択

- 将来的な生体移植のドナー候補についてのwork-upは現時点では制限しておらず、電話での問診含め慎重に進めている

## Effect on Transplant

No uniform testing strategy

Deceased donor testing only recently available though turn around is not rapid in all places

Living kidney on hold in many places with high rates of local viral transmission.

Local recovery of organs strongly encouraged with local teams if possible.



**Organ Offer Polices are local based on local**

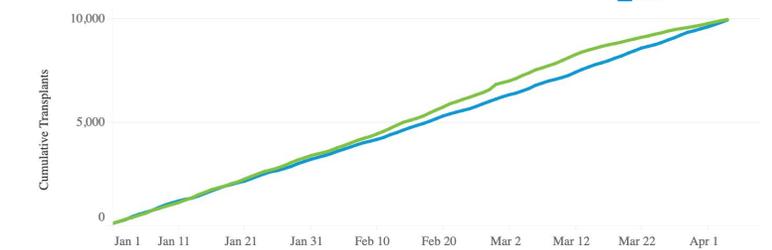
- Testing availability
- Testing turn around time
- Availability of OR/ICU space etc
- Adequate supply of PPE
- Degree of COVID-19 in the community

\*Continual reassessment\*

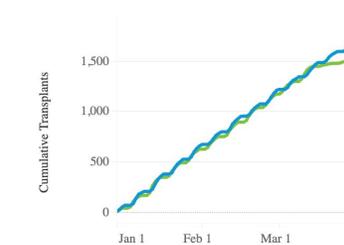
Need to develop ethical policies for priority of waitlisted candidates based on expected rationing of transplant resources



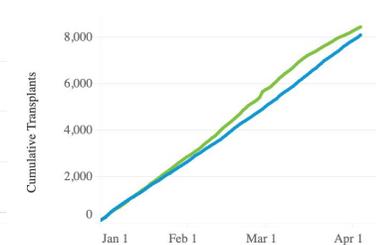
Year-to-date cumulative transplants



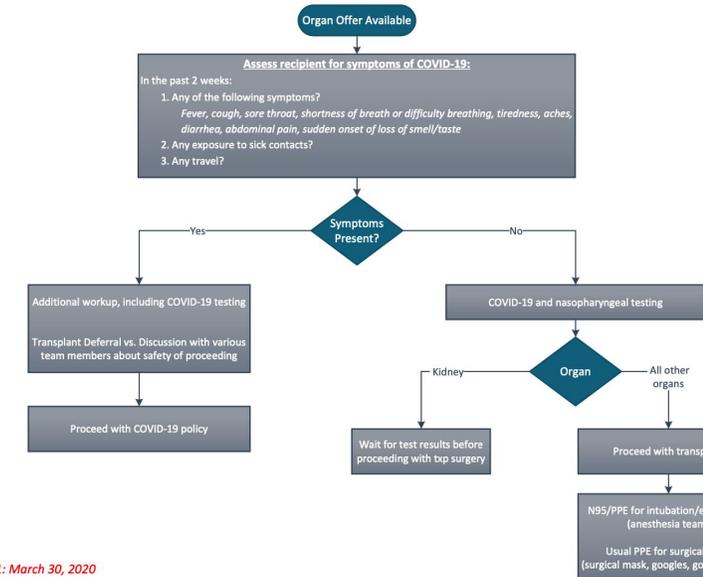
Living donor transplants



Deceased donor transplants



## Organ Offers & COVID-19



Version 1: March 30, 2020

UCSD – living donors on hold

Livers – high MELDs

Lungs/ Heart – all

New waitlist additions focused on severity of illness and expected waitlist time



Transplant

# Dr. Paredes (Spain) \*Nephrologist

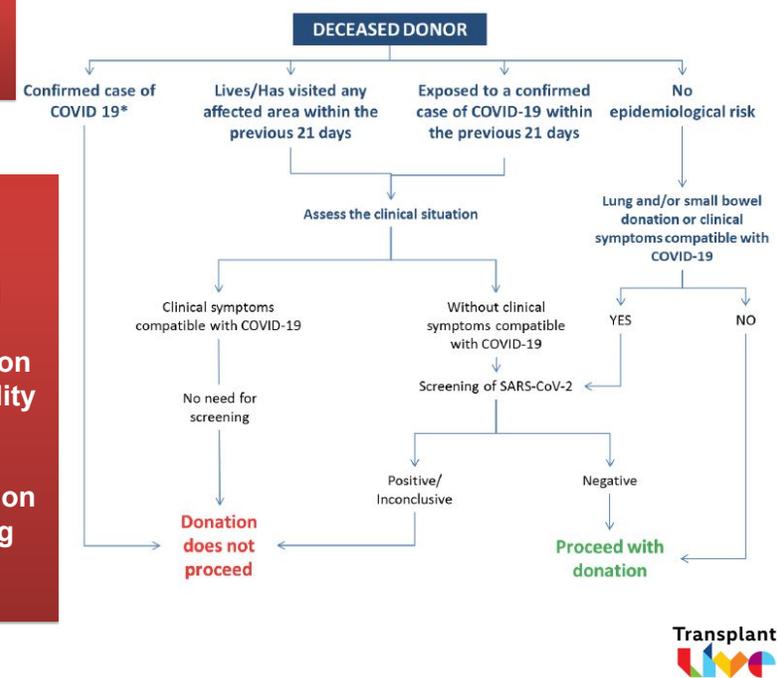
- 4/5現在、感染者130,759名、死者12,418名(死亡率9.5%)
- Uncontrol DCD、生体は中止、controlled DCDとDBDを継続

- 3/9より死体ドナーのCOVID-19感染地域への渡航歴、症状の有無、臓器別に応じた臓器斡旋を採用(右図flow chartを参照)
- 全臓器でlocal retrievalを増やす
- 臓器斡旋につき情勢の変化に即した柔軟な対応が必要で、関連する診療科・部署間の緊密な議論を継続すべき

- ICU、手術室の利用状況の確認
- 現時点でも移植適応とすべき対象患者: 小児、感作された腎移植レシピエント候補、high MELDの肝移植レシピエント候補
- COVID-19に感染したレシピエントのf/uとregistryの構築

## Deceased Donor Evaluation ONT National Tx Organization Spain 09/03/2020

- Increase communication
- Continuous advice MDT
- Reduce TxTeams mobility
- Increase local retrieval for all organs
- Case by Case donor evaluation
- Early search for TxT availability & organ acceptance
- Early HLA typing & CM
- Flexibility, Initiative & Adaptation for organ allocation & sharing
- Observed a reduction in Potential DD cases???

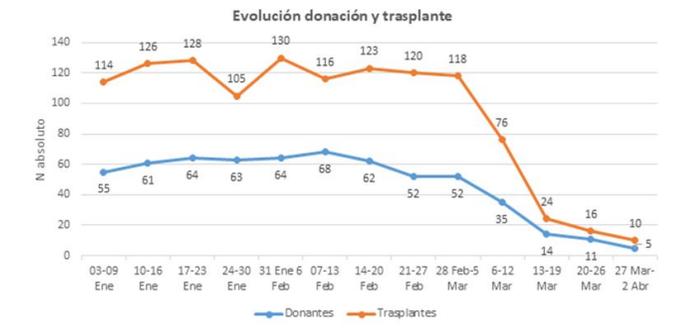


Scenarios	Characterisation	Objective and rationale of the risk management options	Options for response	Reference documents (links below table)
Scenario 4	Widespread sustained transmission and healthcare systems overburdened due to large demand for emergency healthcare services, strained ICU capacity, overworked healthcare workers and reduced staff availability due to illness, lack of PPE and lack of diagnostic testing capacity.	Mitigate the impact of the outbreak, decrease the burden on healthcare services, protect populations at risk of severe disease and reduce excess mortality.	<p><b>Risk communication</b> in accordance with epidemiological developments to public and to healthcare workers;</p> <ul style="list-style-type: none"> <li>• Implementation of pandemic preparedness plan</li> </ul> <p><b>Healthcare system</b>- Testing as in scenario 0</p> <ul style="list-style-type: none"> <li>• Organisation of separate triaging areas or facilities</li> <li>• Isolation of confirmed cases in an airborne infection isolation room (AIIR) with negative pressure and ante-room if available, or a single occupancy room with private bathroom if not (no positive pressure rooms)</li> <li>• Reinforce ICP measures in healthcare settings, airborne transmission precautions (PRE) for suspected and confirmed cases, aim for 100% compliance with standard precautions incl. hand hygiene and respiratory hygiene</li> <li>• Organise home care for mild cases without risk factors for severe disease, send trained healthcare workers to inspect home environment and instruct family members/healthcare workers about home IPC measures and aggravation of symptoms triggering hospitalisation</li> <li>• Set up additional temporary healthcare units/facilities for hospitalisation and treatment of COVID-19 cases.</li> </ul> <p><b>Community measures</b></p> <ul style="list-style-type: none"> <li>• Promote rigorous hand hygiene and cough etiquette</li> <li>• Promote social distancing measures (avoid shaking hands and kissing, avoid crowded places, avoid crowded transports, avoid attending mass gatherings)</li> <li>• Self-isolation for suspected or confirmed cases not requiring hospitalisation (see home care for mild cases)</li> <li>• Consider the cancellation of mass gatherings</li> <li>• Consider measures at the workplace (support teleworking, increased use of email and teleconferences to reduce close contacts, reduce contacts between employees and customers)</li> <li>• Consider reactive school and day care closure may be necessary as a consequence of widespread virus transmission in the community and educational settings.</li> </ul> <p><b>Contact tracing</b> as in scenario 2 if still feasible. Could consider focusing on contacts that are healthcare workers or work with vulnerable populations</p> <p><b>Surveillance</b></p> <ul style="list-style-type: none"> <li>• Focus on aggregate national surveillance if case-based surveillance not feasible</li> <li>• Case based or aggregate reporting through TESSy</li> <li>• Test all SARS cases for COVID-19. Collect data on number of tests done. Report through TESSy</li> <li>• Test samples taken through ARU/ILI surveillance systems for COVID-19. Collect data on number of tests done. Report through TESSy.</li> <li>• Reporting of weekly activity in ARU/ILI surveillance systems</li> <li>• Analyse mortality data to detect excess mortality.</li> </ul>	1-14

- Contingency Measures for ICU
- Multidisciplinary Teams: Tx Hospital, Regional, National
- Reduce impact of COVID19 in O&T DT activity
- Safety and Security for WL Recipients & Transplant Patients
- Safety and Security for Transplant Teams

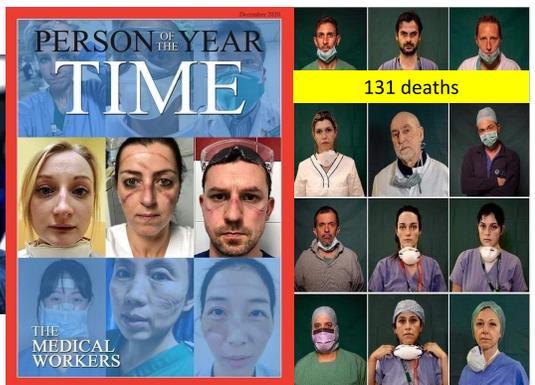
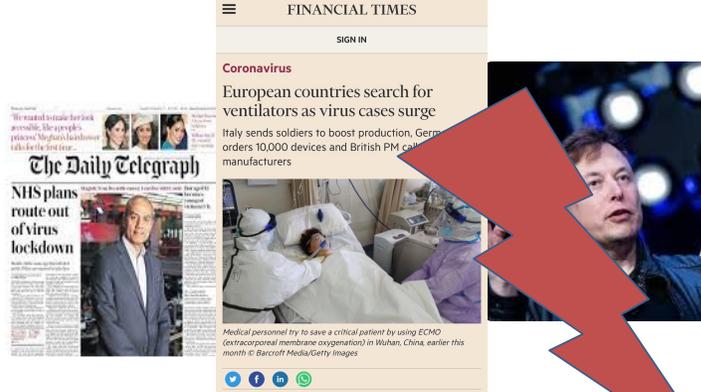
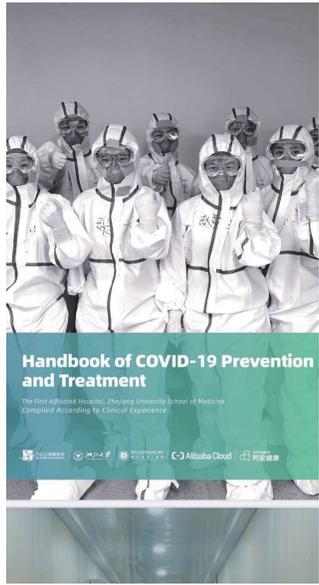
## TRANSPLANT RECIPIENT: EVALUATION & COVID 19 TREATMENT

- Increase communication
- Information for recipients on WL
- Continuous advice MDT
- Continuous update of ICU facilities
- Available OR COVID19 free
- Emergency cases
- Vulnerable groups: Paediatric, Hyperimmunized, High MELD
- Case by Case recipient evaluation
- Living donors suspended
- Elective K and SPKT reduced?
- Follow-up & Registry of Transplant patients infected




Dr. Rubulotta (UK) \*Intensivist

- COVID-19患者が人工呼吸器管理となった場合、回復しても抜管まで平均2-3週間を要し、長期間の理学療法を要する
- 再挿管を要する頻度は平均よりも高い
- ICUでCOVID-19患者を管理するsimulationが重要
- Intensivistの観点からは、COVID-19感染が制御されている病院であれば移植は安全に施行可能だが、現実には難しい



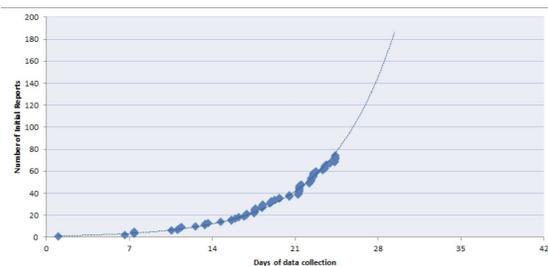
# Dr. Muiesan (UK) \*Transplant surgeon

- 初期対応で欧米ではDrのマスクとPPEの着用を推奨しない、という大きな過ちを犯した
- イタリアで医師80名と看護師25名がCOVID-19感染で死亡

- 手術室内は最低限の人数のみ
- 各医療者の役割に応じたPPE
- COVID-19感染患者(疑い含む)はfull PPE
- Full PPEでは手術手技が遅くなる、かつ身体への負担も大きいいため長時間手術では人員確保が重要
- 腹腔鏡手術はエアロゾル化のリスク高く、益と害を慎重に考慮
- 医療者の頻繁なPCR検査が重要(最低週1回)
- COVID-19 transplant registry: <https://community.ishlt.org>
- 移植待機時間が延びることに伴う死亡(COVID-19関連死)を注視

## COVID-19 and Transplant Recipients

- Solid organ transplant recipients extremely vulnerable
- Children on IS may be "protected" (D'Antiga. Liver Transpl 2020)



## COVID-19 Transplant Registry

- 4<sup>th</sup> week update for the **Solid Organ Transplantation Case Report Series Study Group, University Washington**
- 75 completed reports, of these 10 recent transplants
  - 44 kidney, 10 heart, 8 liver, 6 liver/kidney + other combinations
- Median age 54.5 years
- 66% in hospital 28% in ICU and 16% intubated
- 50% of patients are lymphopenic. ? worse prognosis
- 68% IS modified, in majority MMF Aza are stopped
- 3 patients deceased at the time of initial reporting

<https://community.ishlt.org>

## COVID-19 and Transplant Donors



- Recipient surgery → essential
- Donor surgery → essential
- Laparoscopic retrieval
- Use of CUSA

### DDLT

- Risk of donor-derived transmission unclear
- RNAemia reported in at least 15% in case series
- In high risk countries temporary suspension of DDLT or deferral of more elective transplants

### LDLT

- No LDLT if donor/recipient return from high-risk countries or exposure C-19 within 14 days or fever and/or symptoms
- Temporary suspension of LDLT kidney & liver programs
- Routine testing of upper and lower airway specimens by PCR/NAT of donors with concern for COVID-19
- If LT is required as a life-saving procedure, it can be conducted
  - appropriate assessment of infection in donor and recipient
  - appropriate informed consent

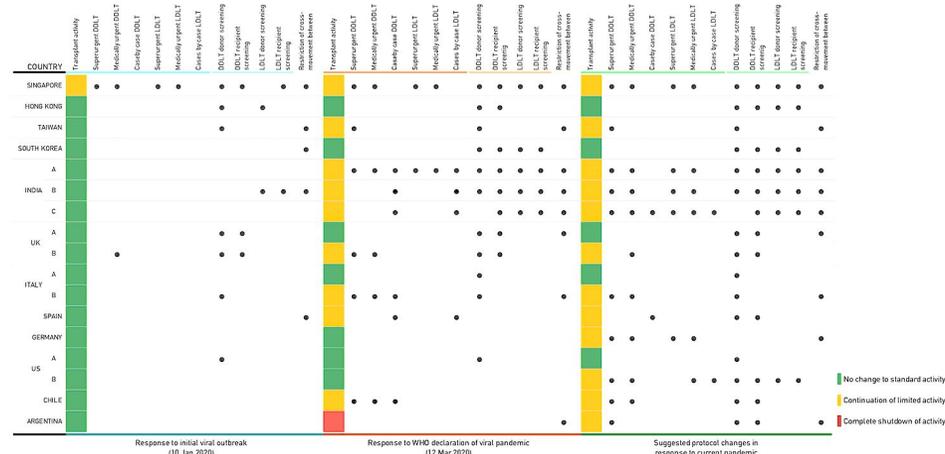


• LDLT: life-savingならドナーとレシピエントの感染リスクの適切な評価と十分なICの下で施行可能



## Effects of a Viral Pandemic on Liver Transplantation Protocols

- Multicentre study 17 centres 12 countries being submitted
- A restriction of ICU beds for both donors and transplant recipients
- Reduction in donations and n. of transplants
- In Italy already 25% reduction of procured organs in first 4 weeks of outbreak (Angelico et al. AJT 2020)



# Dr. Bramstedt (Australia, USA) \*Ethicist

- 現在は移植施設間の競合は保留し、公共(社会一般)の利益を考え行動する時:
  - ✓ ドナーから提供される臓器は社会への贈り物 (community gift)
  - ✓ ドナーとその家族は(当然のことながら)提供臓器が責任を持って管理され活用されること (organ stewardship) を期待し願っている
- 現在のCOVID-19感染蔓延下では、各地域および施設が得た知識と経験を集積し共有しない限りは、移植のbenefitを最大化し感染riskを最小化できず、"organ stewardship"を保つことは不可能→積極的に患者データを共有すべき

- 患者データを共有することについては、個人情報保護の観点からは、今回のように緊急調査を要し、公益性の高いものについては、全世界どこでも免責についての取り決めがあるため、IRBなどに確認
- 施設に帰属するデータが許可なく用いられたり、改竄されたりする危険性についても罰則規定を含む対策が取られている: 権利は守られデータはひとり歩きしない

## What about Consent, Data Sharing, & HIPAA/GDPR/etc?\*

\*Always consult with your IRB/REC & DPO for official guidance for your jurisdiction

\*You likely already have provisions for:

- Emergency Research and/or
- Public Interest

## Fears about Data Sharing



- I have IP!
- My data will get stolen
- My data will get manipulated
- People might accuse me of data misconduct/fake data

### Open Access does not grant an open playing field to abuse researchers

- access limits can be installed [Access Agreement/Terms of Use]
- depending on your region/situation you might still have data "ownership rights"\*
- malicious accusations against researchers is a form of misconduct with potentially serious consequences for perpetrators



\*consult with your institutional IP department



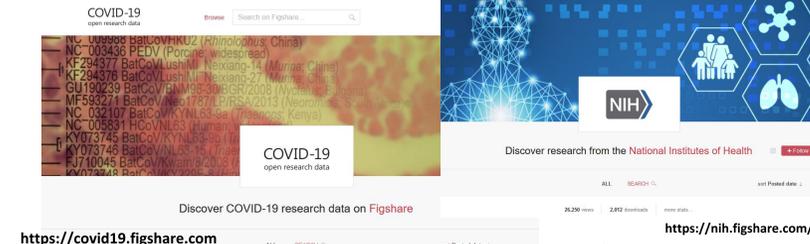
## Benchmark

<https://www.gisaid.org>

"Ownership to data remain unchanged. While Data in GISAIID are publicly accessible, Submitters do not forfeit their rights (IPR) to the Data they deposit in GISAIID. All rights are explicitly preserved and may not be altered under the license provided through GISAIID's Terms of Use."



## Benchmark



<https://covid19.figshare.com>

<https://nih.figshare.com/>



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Steven Buccini,  
Aspen Institute Tech Policy Hub  
<https://www.aspentechpolicyhub.org/team/steven-buccini/>

 *laws* 2020, 9, 6; doi:10.3390/laws9010006  
Article  
**Public Interest, Health Research and Data Protection Law: Establishing a Legitimate Trade-Off between Individual Control and Research Access to Health Data**

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Should consent for data processing be privileged in health research? A comparative legal analysis  
Edward S Dove, Jiahong Chen

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