Mycobactéries et SARS-CoV-2 : co-infections ?
Tuberculose en temps de pandémie virale

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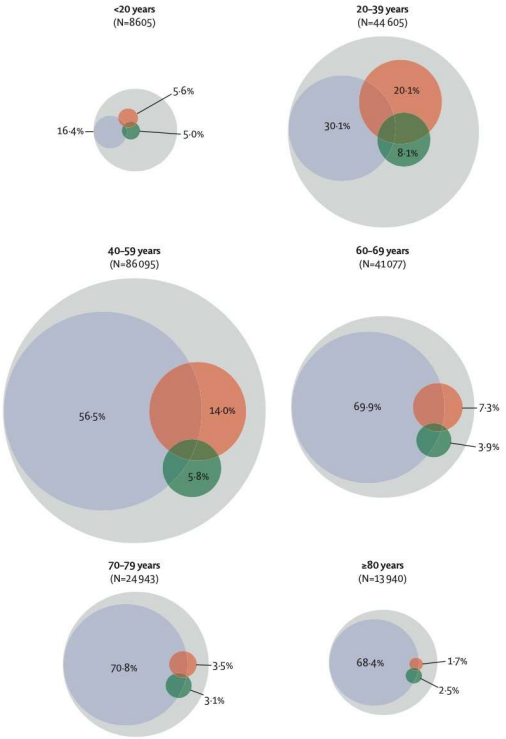
Estimation de la prévalence de la TB chez les patients hospitalisés pour COVID-19

n=219 265
Afrique du Sud

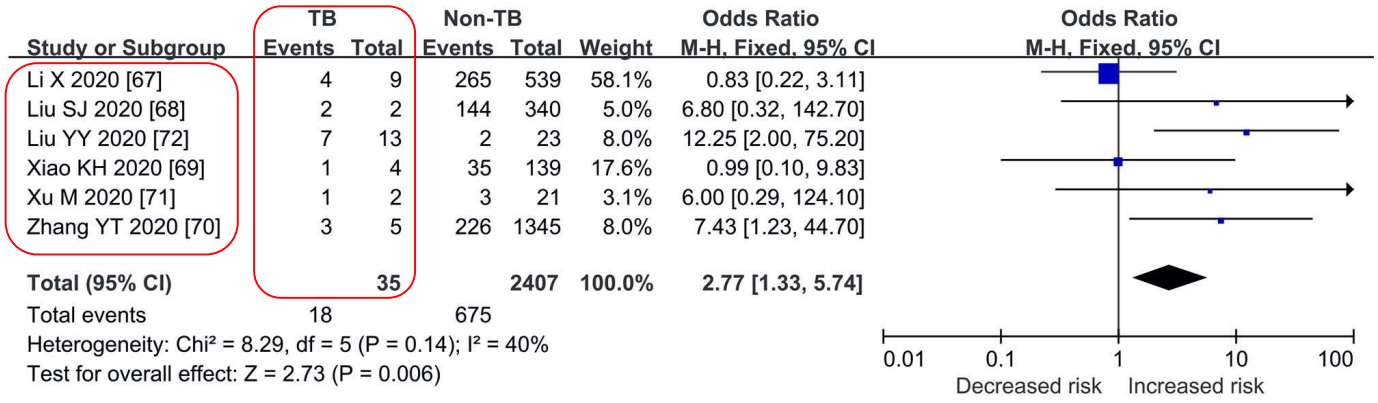
- Comorbidités
- TB (passée et/ou actuelle)
- VIH/SIDA



Jassat W et al. Lancet HIV 2021. Published Online August 4, 2021 https://doi.org/10.1016/ S2352-3018(21)00151-X

Formes sévères de COVID-19 et mortalité

TB: associée aux formes sévères de COVID-19 ?



Study or Subgroup	TB Events	TB Total	Non-TB Events	Non-TB Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Li X 2020 [67]	4	9	265	539	58.1%	0.83 [0.22, 3.11]
Liu SJ 2020 [68]	2	2	144	340	5.0%	6.80 [0.32, 142.70]
Liu YY 2020 [72]	7	13	2	23	8.0%	12.25 [2.00, 75.20]
Xiao KH 2020 [69]	1	4	35	139	17.6%	0.99 [0.10, 9.83]
Xu M 2020 [71]	1	2	3	21	3.1%	6.00 [0.29, 124.10]
Zhang YT 2020 [70]	3	5	226	1345	8.0%	7.43 [1.23, 44.70]
Total (95% CI)		**35**		**2407**	**100.0%**	**2.77 [1.33, 5.74]**
Total events	18		675			

Heterogeneity: Chi² = 8.29, df = 5 (P = 0.14); I² = 40%

Test for overall effect: Z = 2.73 (P = 0.006)

Pooled ORs of severe cases in COVID-19 patients with TB

n = 2442 (6 studies)

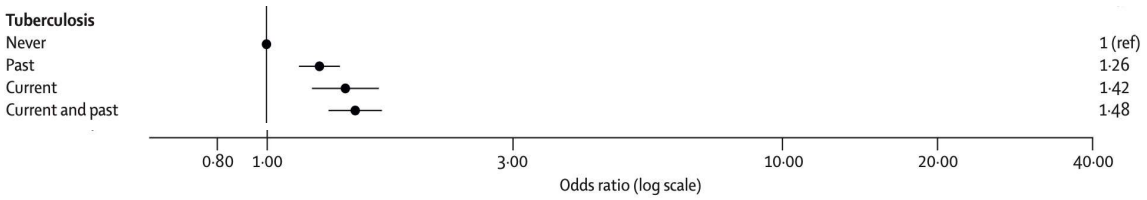
Moderate quality: further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate

Song W-m, et al (2021) COVID-19 and Tuberculosis Coinfection: An Overview of Case Reports/Case Series and Meta-Analysis. Front. Med. 8:657006. doi: 10.3389/fmed.2021.657006

TB: facteur de risque de mortalité en cas de COVID-19 hospitalisée ?

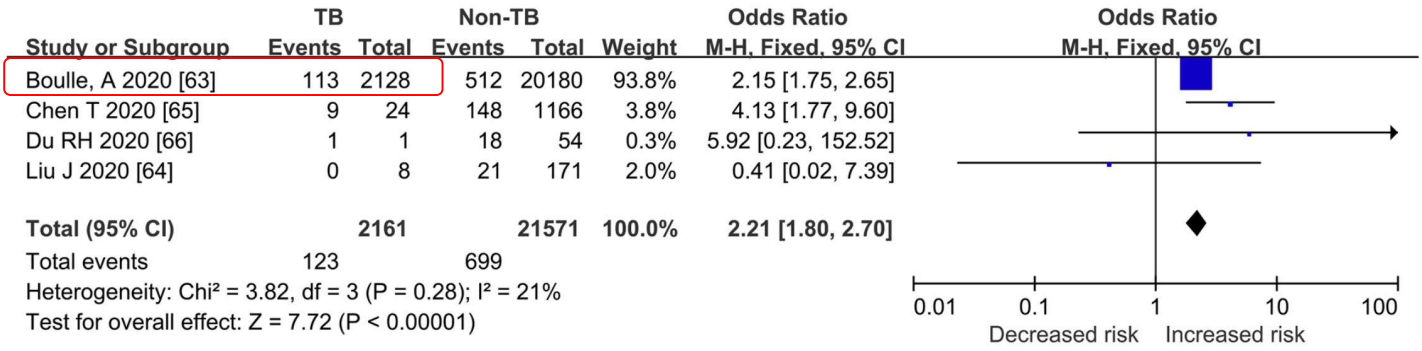
	Case fatality ratio	Unadjusted OR (95% CI) unimputed	p value	Adjusted OR (95% CI) unimputed	p value	Unadjusted OR (95% CI) imputed	p value	Adjusted OR (95% CI) imputed*	p value
Tuberculosis									
Never	31 276/141 099 (22·2%)	1 (ref)	..	1 (ref)	..	1 (ref)	..	1 (ref)	..
Past	759/3001 (25·3%)	0·93 (0·85–1·02)	0·12	1·12 (0·95–1·30)	0·17	1·16 (1·07–1·26)	0·0006	1·26 (1·15–1·38)	<0·0001
Current	258/993 (26·0%)	1·08 (0·93–1·25)	0·33	1·58 (1·30–1·92)	<0·0001	1·04 (0·90–1·20)	0·59	1·42 (1·22–1·64)	<0·0001
Current and past	307/1288 (23·8%)	0·98 (0·85–1·14)	0·80	2·05 (1·59–2·64)	<0·0001	1·14 (1·03–1·27)	0·013	1·48 (1·32–1·67)	<0·0001
HIV									
No	30 697/137 986 (22·2%)	1 (ref)	..	1 (ref)	..	1 (ref)	..	1 (ref)	..
Yes	3407/13 793 (24·7%)	0·84 (0·80–0·88)	<0·0001	1·29 (1·20–1·39)	<0·0001	0·86 (0·82–0·90)	<0·0001	1·34 (1·27–1·43)	<0·0001

Factors associated with COVID-19 in-hospital mortality among patients admitted to hospital with laboratory-confirmed SARS-CoV-2 infection, South Africa (n=219 265)



Multivariable analysis of factors associated with COVID-19 in-hospital mortality

Jassat W et al. Lancet HIV 2021. Published Online August 4, 2021 https://doi.org/10.1016/ S2352-3018(21)00151-X



Pooled ORs of death in COVID-19 patients with TB
n=23732 (4 studies)

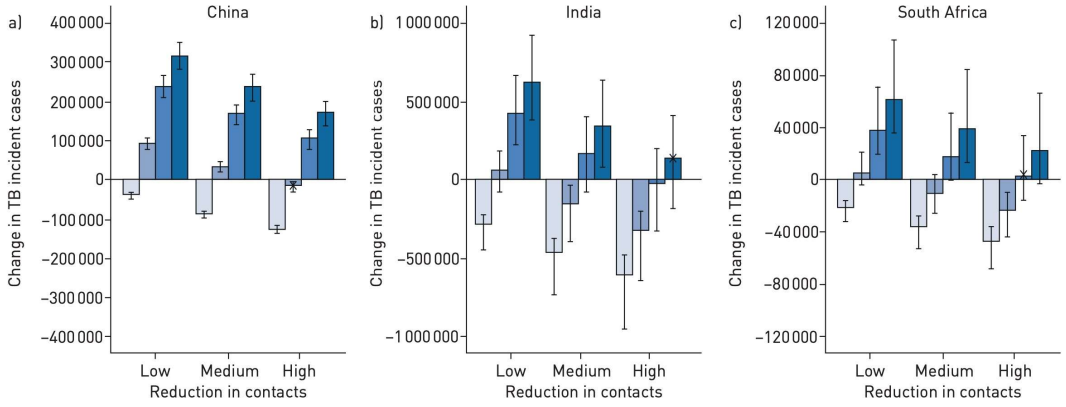
Moderate quality: further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate

Song W-m, et al (2021) COVID-19 and Tuberculosis Coinfection: An Overview of Case Reports/Case Series and Meta-Analysis. Front. Med. 8:657006. doi: 10.3389/fmed.2021.657006

Questions posées avec éléments de réponse ou non

Les mesures barrières liées à la COVID-19 pourraient-elle aussi limiter la transmission de *M. tuberculosis* ?

Mathematical model of TB with an age-specific contact matrix calibrated to data from China, India and South Africa.
3 scenarios for reductions = low, medium, and high
In different forms of social contact = schools, transport, leisure settings , workplaces.



McQuaid CF, et al. The potential impact of COVID-19-related disruption on tuberculosis burden. Eur Respir J 2020; 56: 2001718 [https://doi.org/10.1183/ 13993003.01718-2020].

COVID-19 pourrait-elle activer une ITL ?

Circulation SARS-CoV-2 en zone de forte endémie TB

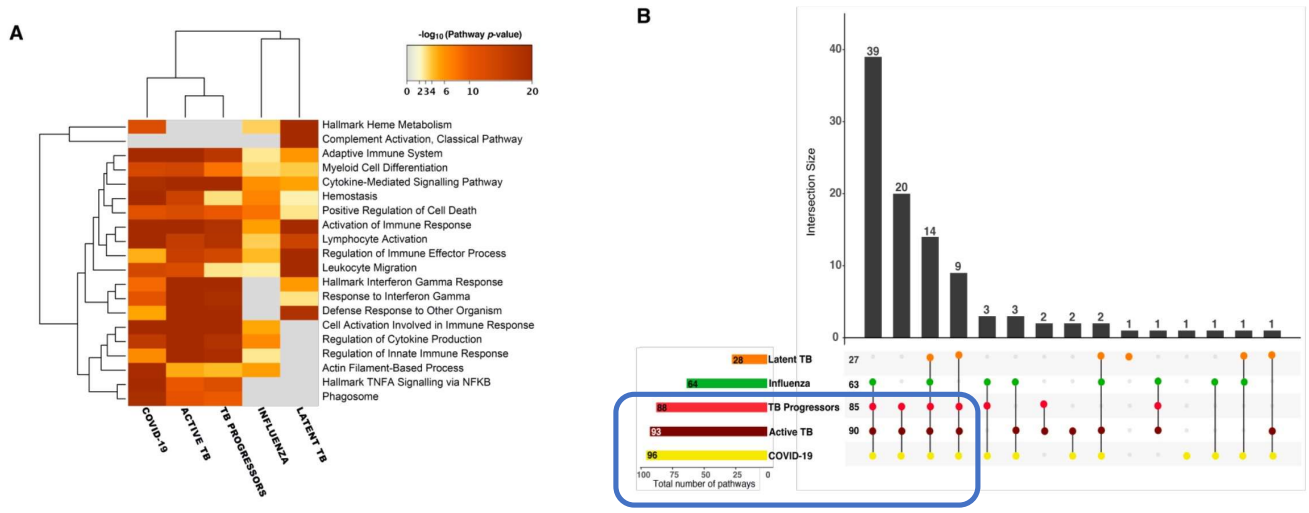
Utilisation CC (6 à 20 mg DXM) dans la COVID-19

Tendance à la prolongation CC quand lésions séquellaires pulmonaires de fibrose

Autres stratégies anti-inflammatoires : anti-IL-6, anti-JAK-2, etc….

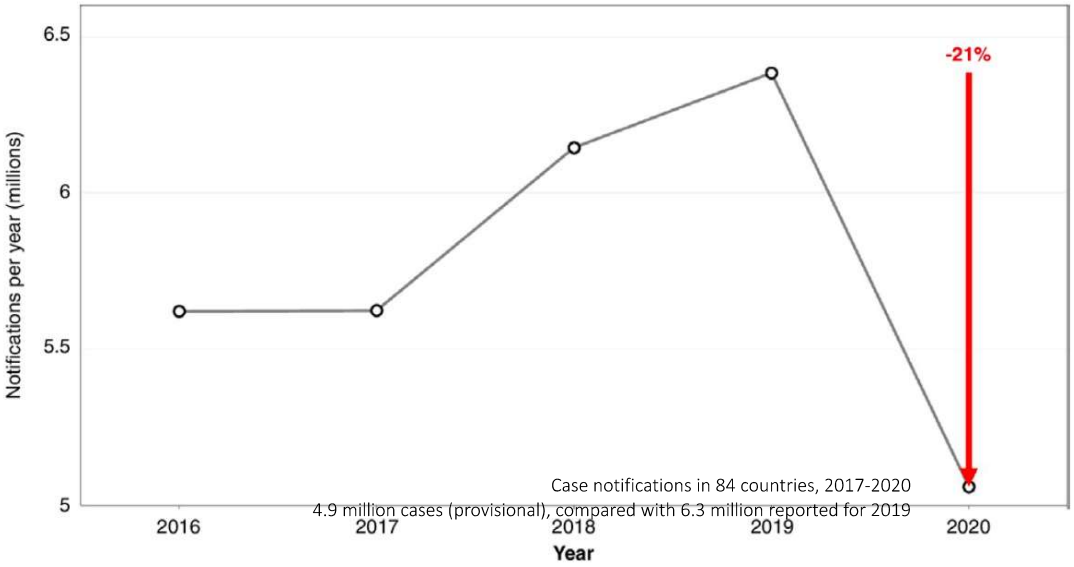
Revaccination BCG : effet protecteur contre COVID-19 sévère (?)

Etude bioinfo du profil transcriptomique des PBMC issus de patients TB active et COVID-19 (Ctr influenza)
Hypothèse : profils similaires TB active et COVID-19 ?
Chargement des TB RNA-seq data
71% signatures transcriptomiques COVID-19 sévère étaient partagés par des patients atteints de TB active



Sheerin D, Abhimanyu, Wang X, Johnson WE, Coussens A. Systematic evaluation of transcriptomic disease risk and diagnostic biomarker overlap between COVID-19 and tuberculosis: a patient-level meta-analysis. medRxiv [Preprint]. 2020 Nov 26:2020.11.25.20236646. doi: 10.1101/2020.11.25.20236646. PMID: 33269371; PMCID: PMC7709192.

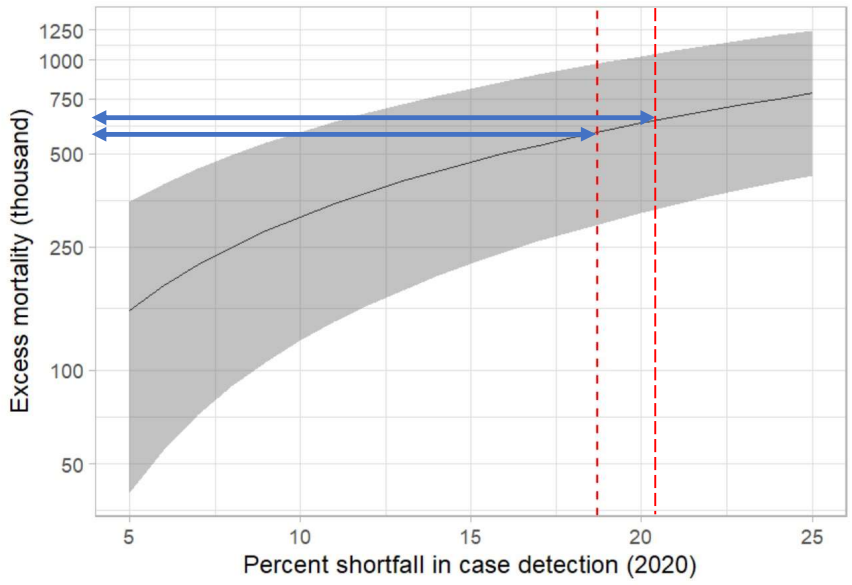
Impact épidémiologique de la pandémie de COVID-19 sur le contrôle de la TB



1.4 million fewer people received care for tuberculosis (TB) in 2020 than in 2019

*Zimmer AJ, et al. J Epidemiol Community Health 2021;**0**:1–7. doi:10.1136/jech-2021-217529*
WHO. Impact of the COVID-19 pandemic on TB detection and mortality in 2020, 2021. Available: https://www.who.int/publications/m/item/impact-of-the-covid-19-pandemic-on-tb-detection-and-mortality-in-2020 [Accessed 21 May 2021].

Estimated excess TB mortality globally



COVID-19 related disruptions in access to TB care could cause at least an additional **half a million TB deaths**

WHO. Impact of the COVID-19 pandemic on TB detection and mortality in 2020, 2021. Available: https://www.who.int/publications/m/item/impact-of-the-covid-19-pandemic-on-tb-detection-and-mortality-in-2020 [Accessed 21 May 2021].

Conclusions

Impact des mesures de distanciation = probablement plus différer que contrôler.

TB serait un facteur de risque de COVID-19 sévère.

Co-infection TB/COVID-19 = mauvais pronostic.

De plus amples données translationnelles et épidémio-cliniques sont nécessaires pour affirmer que COVID-19 peut activer une ITL.

Anticipation par l'OMS d'un impact mondial épidémiologique majeur = REBOND de la TB post-COVID-19.