From: Smith, Paul < Withheld under section >
Sent: Monday, 4 October 2021 1:47 pm
To: Andrew Oliver; Josh Wiles
Cc: MSD; Brown, Alister
Subject: RE: Molnupiravir Supply to New Zealand
Attachments: NZL MOV Epi Modelling for Patient Volumes 04 October 2021.pptx; Molnupiravir clinical program update_Pharmac 20210922 v2.pptx

Proprietary

Hi Andrew and Josh
Thank you for the call today in what was a productive meeting.
As discussed the next actions are:
MSD to provide:

- The slides of the epi modelling which are attached. Also, we would be happy to go through the model live with your health economist if desired.
- The slides presented at the clinical review last week which was prior to the Friday night read out.
- I will seek to obtain further clinical data as quickly as possible

As discussed this is my number one priority at the moment and I can drop anything to answer your questions. I look forward to catching up later in the week.

Thank you
Paul

From: Smith, Paul
Sent: Monday, 4 October 2021 10:21 AM
To: Andrew Oliver < Withheld under section 9(2)(a) >; Josh Wiles < Withheld under section 9(2) >
Cc: [redacted] < Withheld under section >; Brown, Alister < Withheld under section >; Smith, Paul < Withheld under section >
Subject: Molnupiravir Supply to New Zealand

Proprietary

Dear Andrew and Josh

Thank you again for your time on Wednesday last week and follow up today.
We agreed a number of follow up actions which are either actioned or I have updates on below.

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   Withheld under section 9(2)(b)(ii) and 9(2)(ba)(i)
   Withheld under section 9(2)(b)(ii) and 9(2)(ba)(i)
2. **Submission to PHARMAC**: We aim to have this with you via e-mail by Weds 6th October this week
3. **Confirmation of which countries in the region are covered by MSDs voluntary licence (VL):** The following countries **are** covered by the VL: Withheld under section . Some countries are **not** covered: Withheld under section 9(2)
4. **Molnupiravir terms sheet**: This is attached
5. **Clinical data we presented**: I will forward this when the NDA is completed

6. **Non-disclosure agreement (NDA)**: we sent this through on the 1st October and you have indicated it is with your internal legal team thank you
7. **Epidemiology modelling details**: We cannot provide the raw model, but we can present it and provide a hard copy of outputs. We can do this when we meet today

PHARMAC to revert with:

1. A date to meet again this week: for MSD to present any new clinical and epidemiology data and further discuss the term sheet. You indicated Weds 6th may work and I can be available any time that day
2. Signed copy of the Non-disclosure agreement

I look forward to speaking later today and hearing from you regarding a meeting time and date and again thank you.

Nga mihi

Paul Smith
Managing Director, New Zealand
MSD

A. Level 3, 123 Carlton Gore Rd, Newmarket, Auckland 1023
M. Wi W Wi Wit


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From: Eric Matthews
Sent: Thursday, 7 October 2021 10:16 am
To: Scott Metcalfe; Adrienne Martin
Subject: RE: Papers for Health System Readiness steering group,11am tomorrow

Why targeting is important if molunpavir supply is scarce.

The table below outlines of the 270,000 cases estimated by the northland DHB, using the age structure of cases and hospitalisation in Ireland (can use what ever country relevant). But just to illustrate if you say targeted those over 45 years, you would give molnupavir to **32% of cases**, which would potentially impact **77% of hospitalisations**. As opposed to treating all over 18, you would require to treat potentially **80 to 85% of cases** (50% more of total cases) to impact an additional **20% of hospitalisations.**

So just to keep in mind if we can only say get 30,000 doses and prioritising of doses is required. Or we get 60,000 doses and we are heading toward >100,000's of cases.

Item	Cumulative case proportions	Case proportions	Cases by age group	Cumulative hospitalisation	Hospitalisation rate	Hospitalisation
0 to 4	100.0%	4.1%	11,090	100.0%	1.4%	94
5 to 14	95.9%	10.6%	29,042	98.6%	1.2%	85
15 to 24	85.3%	20.9%	57,068	97.4%	4.5%	313
25 to 34	64.4%	17.3%	47,228	92.9%	7.2%	499
35 to 44	47.1%	15.3%	41,699	85.6%	8.7%	597
45 to 54	31.8%	12.8%	35,018	77.0%	11.6%	802
55 to 64	19.0%	9.1%	24,910	65.4%	13.5%	935
65 to 74	9.9%	4.6%	12,584	51.8%	17.3%	1,194
75 to 84	5.3%	3.1%	8,469	34.5%	21.0%	1,448
85+	2.2%	2.2%	5,993	13.5%	13.5%	934

From: Scott Metcalfe <Withheld under section 9(2)(a)>
Sent: Thursday, 7 October 2021 9:46 am
To: Adrienne Martin <Withheld under section 9(2)(a)>; Eric Matthews <Withheld under section 9(2)(a)>
Subject: RE: Papers for Health System Readiness steering group,11am tomorrow

This is helpful – it will be thinking that wider Govt will be considering.,

Garry Jackson's is suggesting 'worst case' (90% vaccine coverage, nil for children <12, loose public health control and borders) a caseload in the Northern region (4 DHBs) of 5300 new cases/week in 2022
Those 4 DHBs account for 38% of NZ's population
So that would translate to 14k cases/week fr NZ in 2022
If those levels of weekly cases were sustained over a month or two; and if we assume at least half of those cases would be eligible/suitable for molnupiravir, then the 60k courses suggested by MSD would last approx. 8 to 9 weeks.
As in, 60k courses does not seem unreasonable, if it was decided to loosen public health controls and loosen border restrictions.

Ngā mihi
Scott

R Scott Springford Metcalfe (was Scott Metcalfe) (he/him)| Chief Advisor Population Medicine / Deputy Medical Director
M: Wit W With Wit

Please note I usually don't work on Fridays

From: Adrienne Martin < Withheld under section 9(2)(a) >
Sent: Thursday, 7 October 2021 9:03 am
To: Scott Metcalfe < Withheld under section 9(2)(a) >; Eric Matthews < Withheld under section 9(2)(a) >
Subject: FW: Papers for Health System Readiness steering group,11am tomorrow

FYI

Adrienne Martin | Senior Therapeutic Group Manager/Team Leader
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P: +64 4 460 4990 | www.pharmac.govt.nz

From: Sarah Fitt <Withheld under section 9(2)>
Sent: Thursday, 7 October 2021 8:52 am
To: Adrienne Martin < Withheld under section 9(2)(a) >
Subject: FW: Papers for Health System Readiness steering group,11am tomorrow

This paper has some modelling for the Northern Region

Ngā mihi,

Sarah

Sarah Fitt | Chief Executive

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DDI: Withheld | P: +64 4 460 4990 | M: Withheld | www.pharmac.govt.nz

From: Robyn Shearer <Withheld under section 9(2)(a)>
Sent: Wednesday, 6 October 2021 4:07 PM
To: Ashley Bloomfield <Withheld under section 9(2)(a)>; Andrew Connolly <Withheld under section 9(2)(a)>; Amy Wilson <Withheld under section 9(2)>; Andrew Norton [DPMC] <Withheld under section 9(2)(a)>; Withheld under section 9(2)(a); Kirsten Stephenson <Withheld under section 9(2)(a)>; Dan Coward <Withheld under section 9(2)>; Fergus Welsh <Withheld under section 9(2)>; Gerardine Clifford-Lidstone <Withheld under section 9(2)(a)>; Withheld under; John Whaanga <Withheld under section 9(2)(a)>; Lorraine Hetaraka <Withheld under section 9(2)(a)>; Martin Chadwick <Withheld under section 9(2)(a)>; Caroline Flora <Withheld under section 9(2)(a)>; nick chamberlain-EXT <Withheld under section 9(2)(a)>; russell simpson-EXT <Withheld under section 9(2)(a)>; Russell Simpson <Withheld under section 9(2)(a)>; Simon Everitt <Withheld under section 9(2)>; Don Matheson <Withheld under section 9(2)(a)>; Sarah Fitt <Withheld under section 9(2)>; Andrew Ingersoll <Withheld under section 9(2)(a)>; Te Rimene Workman <Withheld under section 9(2)(a)>; Geoff Gwynn <Withheld under section 9(2)>; Nicola Holden <Withheld under section 9(2)(a)>; Anika de Mul <Withheld under section 9(2)>; Margie Apa-Ext <Withheld under section 9(2)(a)>; Bhargav Srinivasan (ADHB) <Withheld under section>; Withheld under section 9(2)(a); Clare Perry <Withheld under section 9(2)>; Louise Chamberlain <Withheld under section 9(2)(a)>
Subject: Papers for Health System Readiness steering group,11am tomorrow

Tēnā koutou,

Please find attached the papers for our Health System Readiness steering group meeting tomorrow, from 11am – 12.30pm.

We are not able to use the ELT room for this meeting, so ask that you please join online.

Look forward to seeing you all tomorrow.

Ngā mihi nui,
Robyn

Robyn Shearer (she/her)
Deputy Chief Executive – Sector Support and Infrastructure
Deputy Director General – DHB Performance and Support

Manaakitanga, Kaitiakitanga, Whakapono, Kōkiri ngātahi

MINISTRY OF HEALTH
MANATŪ HAUORA

****

Scenario modelling overview

The below assumptions have been used to model the predicted impact of COVID in the Northern Region in 2022.

Key assumptions (Full assumptions available on request)

- 90% adult vaccination rate by Dec 2021.
- Children ages 12-15 are vaccinated.
- 0-11 year olds not vaccinated
- Borders are opened 1 Jan 2022.
- Restrictions remain on travel to some countries, but otherwise quarantine-free travel is occurring.
- Assume Delta variant is main issue, medium R0 = 4.5 per REF.
- Assume variation in coverage by community around the average vaccination coverages.
- Vaccine efficacy (Pfizer) against Delta = 88%, against severe disease 94%.
- Assume severity proportions as per REF.
- Vaccine reduction in transmission 85%.
- No further community lockdowns, but case isolation and contact tracing e.g. as measles is managed now, drops R0 44% [REF p11].
- Health care workers at 93% coverage - assume other groups slightly lower.
- M + P have 2 5 and 3x the rate of hospitalisation as European/Other.

	Over 2022 year					Average per week in 2022		
DHB	Cases	Hospitali-sations	Deaths	% cases M or P	% deaths M or P	Cases	Hospitali-sations	Deaths
Northland	27,700	900	190	45%	54%	500	18	4
Waitemata	88,800	2,000	380	20%	32%	1,700	38	7
Auckland	68,400	1,600	300	23%	42%	1,300	31	6
Counties M	88,300	2,400	430	44%	60%	1,700	46	8
Total NR	**273,100**	**6,900**	**1,300**	**31%**	**47%**	**5,300**	**133**	**25**

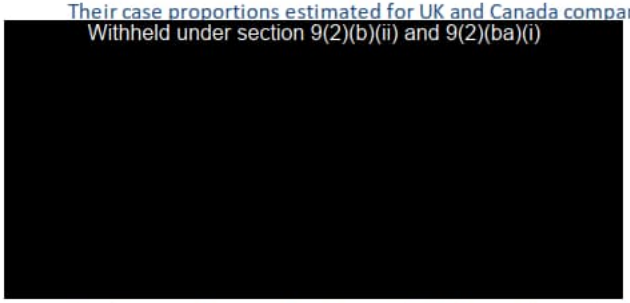
Out of scope

From: Eric Matthews
Sent: Thursday, 7 October 2021 2:07 pm
To: Andrew Oliver
Cc: Adrienne Martin; Josh Wiles; Scott Metcalfe
Subject: RE: [Confidential] RE: Molnupiravir Supply to New Zealand

Hi Andrew,

Interesting. Few comments:

Cases for NZ in 2022 between 44,000 to 91,000 estimated by the supplier seem quite low? Compared to what is informing the Govt, northland estimates and considering countries overseas as a proxy. And have noted their approach to estimating this is likely quite limited.
Their case proportions estimated for UK and Canada compared with NZ's August outbreak. Quite similar to Canada



Using the suppliers calc for who is eligible for molnupavir of cases, New Zealand we estimate 37% of cases less than 18 and a hospitalisation rate of 2.53% (northland estimate) to inform severe cases, which would mean 39.5% of cases would not be eligible for Molnupavir.
So to what ever cases we anticipate. We would treat 60.5% of cases if we were to use the anti-viral with no restriction for cases in people >18 years.
So for example, using the suppliers eligibility. If New Zealand has 100,000 cases. Than 60,000 doses would be sufficient if used for all mild to moderate COVID cases > 18 years.
If we tighten eligibility than 60,000 doses can go further, say if New Zealand was likely to have much more than 100,000 cases

---

From: Andrew Oliver < Withheld under section 9(2)(a) >
Sent: Thursday, 7 October 2021 1:05 pm
To: Eric Matthews < Withheld under section 9(2)(a) >
Cc: Adrienne Martin < Withheld under section 9(2)(a) >; Josh Wiles < Withheld under section 9(2) >
Subject: FW: [Confidential] RE: Molnupiravir Supply to New Zealand

Hi Eric,

Forwarding MSD's response to your modelling questions. Looks like they have provided quite a bit of info on the inputs. Also note the offer at the end to run additional scenarios if we think that would be of value.

Cheers,
Andrew

Andrew Oliver | Senior Therapeutic Group Manager/Team Leader

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DDI: Withheld under section | P: +64 4 460 4990 | www.pharmac.govt.nz

From: Brown, Alister <Withheld under section>
Sent: Thursday, 7 October 2021 12:35 pm
To: Andrew Oliver <Withheld under section 9(2)(a)>
Cc: MSD <Withheld under section>; Josh Wiles <Withheld under section 9(2)>; Smith, Paul <Withheld under section>
Subject: [Confidential] RE: Molnupiravir Supply to New Zealand

Confidential

Dear Andrew,

Withheld under section 9(2)(b)(ii) and 9(2)(ba)(i)
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From: Andrew Oliver <[redacted]>
Sent: Wednesday, 6 October 2021 8:45 AM
To: Smith, Paul <[redacted]>; Brown, Alister <[redacted]>
Cc: [redacted] <[redacted]>; Josh Wiles <[redacted]>
Subject: RE: Molnupiravir Supply to New Zealand

EXTERNAL EMAIL – Use caution with any links or file attachments.
Hi Paul,
Thank you for that. There was a further clarification to the first bullet point – I have added it in red below.
Regards,
Andrew

Andrew Oliver | Senior Therapeutic Group Manager/Team Leader

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Cc: MSD <[redacted]>; Josh Wiles <[redacted]>
Subject: RE: Molnupiravir Supply to New Zealand

Proprietary

Hi Andrew
The modellers are based overseas and we will aim to speak to them today when awake.
We will work on your questions ASAP
Thanks
Paul

From: Andrew Oliver <[redacted]>
Sent: Tuesday, 5 October 2021 5:52 PM
To: Smith, Paul <[redacted]>; Brown, Alister <[redacted]>
Cc: [redacted] <[redacted]>; Josh Wiles <[redacted]>
Subject: RE: Molnupiravir Supply to New Zealand

Andrew Oliver | Senior Therapeutic Group Manager/Team Leader

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Nga mihi

Paul Smith
Managing Director, New Zealand
MSD

A. Level 3, 123 Carlton Gore Rd, Newmarket, Auckland 1023
M. Wi W Wi Wit

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From: Scott Metcalfe
Sent: Wednesday, 6 October 2021 3:06 pm
To: Eric Matthews; Adrienne Martin; Josh Wiles; Andrew Oliver
Subject: RE: COVID-19 hospitalisation and ICU tolerance, imputed from Australia's purchase of 300k courses

Further to yesterday's conversation;
Re MSD modelling of 30-60k molnupiravir courses pa for NZ;
Australia's purchase of 300k molnupiravir courses (https://www.newshub.co.nz/home/politics/2021/10/act-s-brooke-van-velden-accuses-government-of-dropping-the-ball-on-antiviral-covid-19-medication.html) assumes the Aus caseload will eventually be maybe 2.6 times that of the current number of cases Aus has experienced to date (115k)
Aus data from https://www.abc.net.au/news/2020-03-17/coronavirus-cases-data-reveals-how-covid-19-spreads-in-australia/12060704#recoveries

If NZ provided 60k courses over 1 year, that would be the same per capita as the Aus purchase (300k)
NZ at 30k courses/year would be half the Aus per capita projected use – ie an assumption that NZ could better keep delta COVID-19 caseloads at lower levers than projected for Australia.

If molnupiravir has 50% efficacy at lessening disease severity, then a NZ caseload of 60k per year means 18 cases in ICU at any one time (double that if no Rx; 1% of Aus active cases are in ICU, 6% in hosp incl ICU); this compares with NZ having 230 ICU beds nationally. Around 1800 patients would be hospitalised each year (3600 if no molnupiravir?)
18 COVID-19 cases in ICUs at any time = 8% of ICU capacity
60k cases year would mean around 1200 cases per week (168 cases/day). NZ is currently experiencing ~20 cases per day; 170 cases a day sounds possible, and treatable, at Level 2 nationally.
No molnupiravir might mean, at the same Alert level 2 nationally, double the prevalent ICU and hosp loads (600, 3.5k respectively)

It depends a lot on vaccination rates; and tolerance to new cases vs stringent public health measures; a Rx like this reduces some of the risk occurring with any suboptimal vaccine coverage

Ngā mihi
Scott

R Scott Springford Metcalfe (was Scott Metcalfe) (he/him)| Chief Advisor Population Medicine / Deputy Medical Director
M: Wit W With Wit

Please note I usually don't work on Fridays

From: Scott Metcalfe
Sent: Tuesday, 5 October 2021 4:30 pm
To: Eric Matthews < Withheld under section 9(2)(a) >; Adrienne Martin < Withheld under section 9(2)(a) >; Josh Wiles < Withheld under section 9(2) >; Andrew Oliver < Withheld under section 9(2)(a) >
Subject: COVID-19 hospitalisation rates by age-group - 2020 NZ epidemic figures (ie unvaccinated popln)

If helpful; the 1504 cases to 28 July 2020

10-year agegroup	no. cases	no. hospitalised	hosp rate
0-9	36	1	3%
10-19	121	2	2%

20-29	358	6	2%
30-39	229	9	4%
40-49	220	13	6%
50-59	246	18	7%
60-69	178	20	11%
70-79	77	15	19%
80+	39	11	28%
total	1504	95	6%

Ngā mihi
Scott

Dr R Scott Springford Metcalfe (was Scott Metcalfe) (he/him) | Chief Advisor Population Medicine / Deputy Medical Director; public health physician | MBChB DComH FAFPHM(RACP) FNZCPHM FNZMA

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DDI: [redacted] | P: +64 4 460 4990 | **M:** [redacted] www.pharmac.govt.nz

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