The provision of scientific advice to support policy making during Covid

The purpose of this paper is to set out some of the themes which emerged from a series of 14 interviews with 5 analysts and scientists, and 9 policy leads about the lessons learned from the pandemic and the way evidence and intelligence is used to inform policy making and support Ministerial decision making. A list of those interviewed is at Annex 1.

During the pandemic several sources of engagement and evidence were utilised. This paper focusses on the scientific advice of TAC and the TAG subgroups and the wider spectrum of clinical and PHW advice and KAS involvement, although this was not as direct as some of the other routes.

Several interviewees drew attention to the changes that occurred during the different phases of the pandemic. Noting the first six months were frenetic and very different to where we ended up. Where relevant the paper tries to distinguish between early and later phases. However, the interviews were conducted in May/ June 2022 and are more likely to reflect issues as understood at that time. The themes which emerged have been arranged under the headings:

- Effective engagement - the importance of mutual dialogue and support
- Aligning evidence and join-up with policy
- Balance of harms
- Advising Ministers
- Other lessons learnt

Effective engagement -the importance of mutual dialogue and support
Both formal and informal engagement worked most effectively, when there was a **two-way conversation** between scientists, analysts, and policy makers. Learning from each other and early engagement was key to building a policy/science interface that allowed for open discussions. When commissioning it was key to talk to the experts first to develop the research questions together, then formally commission the work. Often it appeared policy and analysist were speaking different languages but were really saying the same thing and moving towards the same place, it just took time to build a mutual understanding of each position. By bringing together both policy and science, areas for exploration were identified that maybe would be overlooked otherwise. Sometimes policy teams were commissioning without knowing what evidence was available. A clear and realistic discussion in advance was out there would have helped.

Much of the **positive engagement** came through TAC and the TAG sub-groups when they were established. TAC structures were useful as a central contact point and respondents knew who to approach on scientific questions while sub-groups provided more practical application of data to the real-life options. With very tight time scales what was needed was not lots of structure but a dialogue about what was coming up, to understanding what policy teams were trying to do.

Policymakers without scientific backgrounds needed to be **supported** to ask the right questions of their specialist advisers. Policy leads reported that it would have been helpful to work through the policy questions with people with a science and policy background to help frame the outcomes and objectives. Policy leads sometimes felt it was unclear exactly what information they were chasing, and some policy leads were told they were 'not asking the right questions'. In these circumstances it would have been helpful to work through the policy questions with an intermediary with a science and policy background to help frame the outcomes and objectives. What worked well for analysts was when policy teams asked the question they really wanted to know, or the final outcome enabling analysts to work back from that. Analysts thought policy colleagues should focus in on the decision that needs to be made rather than asking for information about the subject as a whole.

Policy teams sometimes needed additional support to **translate** the evidence that was presented at TAC/TAG, which could sometimes be very technical and academic. Time would be spent by policy officials trying to translate what the science meant for policy. PHW and environmental health advice was seen in some cases to be more practical and operationally focused. TAC was good for scientific questions but could lack the practical application of data to the real-life options that needed decisions. This is where many of the TAC sub-groups were able to bridge this gap.

Communicating messages to the public was key to drive positive behaviours. Given the pure scientific nature of the PHW and TAC, it was a challenge to convert the advice into simple messages that would resonate to the public. More engagement with analysts who can 'translate' the science into policy would be helpful. Members of science professions need to be able to communicate and act as effective mediators between them and external experts.

It was thought that **embedding** PhD students in policy teams worked well to spread scientific understating. In one team, embedded economists acted as bridge with the scientific community enabling them to bring in analysts to speak with the team as necessary. Several policy leads would have found dedicated or embedded senior analysts would have worked best.

Commented [OR(HPTAC1]: We are using the langue of Science-Policy Interface or SPIs as the go-between. These are either scientists who can speak and understand the Civil Service and policy needs, or Civil Servants who can speak science and understand the complexities – also importantly the limitations or uncertainties

Without dialogue, policy teams were sometimes expected to know exactly what they wanted from the outset. When asking questions of PHW and TAC these needed to be very precise to get to the answers needed, which sometimes was difficult to articulate. Early engagement with PHW was difficult, in either identifying those best placed to provide advice or to get through the formal commissioning routes. Interviewees reflected that their structures hindered two-way conversations, which had also not been commonplace so was culturally novel and moving discussion into meaningful action. The later development of post box arrangements for TAC also meant that direct engagement with scientists/ analysis became more difficult.

There may be **weaknesses in policy teams** with insufficient analytical skills and an ability to know how to ask the questions of scientists and analysts. Equally analysts

need to understand the policy and policy-making process, leading to a better dialogue. Analysts and policy leads worked best where they had that relationship. Having data and research literacy in policy colleagues was key and within WG this helped facilitate the development of the modelling and interrogation of data. Once colleagues understood the limitations of the model it meant that they could better articulate the research questions.

It was noted there was often a low level of **challenge** from policy teams to the TAC and scientific advice, which was surprising given the high level of uncertainty, and a sign of policy weakness during the pandemic. Policy Officials were sometimes overwhelmed by science advice, so scientists and analysts who understood the policy consideration were valued and there was a mutual respect. Sometimes there was a deference to the science and technical knowledge while other considerations were given a lower weighting. Policy officials need to be confident to challenge the evidence and ask searching questions to ensure decisions are made on a balance of factors. One interviewee reported that as policy officials' engagement with analysis increased, confidence to interpret and challenge the advice improved.

Level of detail was sometime challenging. **Time with the experts** was useful to get to a better scientific understanding of the advice and how it could be applied. For example, understanding of the data would be better facilitated when KAS colleagues would attend team leads meeting allowing for cross fertilisation within teams and areas.

It was felt that **capacity issues** within TAC, and a lack of scientists and analysts able to synthesise data and information, meant they were overwhelmed with the numbers of questions asked of them. In response to the first winter paper 8 TAC sub-groups were established with academics, PHW, stakeholders etc. and other commissioned advice or evidence came from Health Boards or joint commissions via the CMO & PHW.

The multidisciplinary nature of these groups was helpful; over 200 experts were engaged, and these was considerable goodwill from the academic community to support this work.

However, reliance on a small number of internal analysts and scientists represented a single point of failure when given the amount of pressure people were under, lack of capacity and the breadth of information they were asked to provide. Several policy colleagues noted engagement was with TAC tended to be with senior members and they had not engaged with other analysts, nor were they visible, which was understood to be a means of protecting individuals under pressure, but direct contact would have been helpful.

Analysts felt there needs to be more capacity in WG to undertake rapid analytics where data can be assessed quickly, and quality checked. At present this takes too long given reduced numbers of analysts.

Commented [OR(HPTAC2]: This is important – we will need to work on this. We tried using things like the probabilistic yardstick and confidence levels – but we need to do more on this – it is an important part of the scientific process – e.g. challenge!!

Commented [HR(CS&TEW3R2]: Is it really surprising , this was a public health emergency with no precedents , as policy officials, and given the the strength of message from Ministers re public health first, we had to rely on the expert advice.

Commented [OR(HPTAC4]: I think this could reframed a little we established 8 subgroups (it was a recommendation in the first Winter Paper) – also PHW were the first members of TAG

Commented [OR(HPTAC5]: This is an important point. We need to help people know who they can talk to – ideally before an emergency.

TAC, CMOs and DCMOs and environmental health supported policy leads by **speaking directly with stakeholders** about the evidence that supported decisions and this approach was considered successful. Webinars and other sessions were held where experts were able to speak credibility about the position and this helped with difficult conversations with stakeholders where there may have been a lack of direct evidence for control measures in their particular sector. Stakeholders valued this approach as they seemed to trust the analysts, experts and scientists. They fully supported the opportunity for expert colleagues to be presenting information directly to them and felt included.

Over time TAC and the analysts became better at understanding what the policy needs were. Policy teams also became better at articulating questions. Presentation of information became more accessible in terms of reporting and diagrams/graphs to illustrate difficult issues and produced on a more regular cycle. The systems got better at re-producible analysis that could be used again. It made it possible to rapidly produce evidence based on already having data, permissions, and data sharing agreements in place. Raw live feeder data underlining the story and moving the policy forward. Although resources were stretched. The national modelling forum, use of local level indicators was a good, trusted way of working and led to SAGE papers being shared before they were published. The coronavirus monitoring reports were a massive step forward to public understanding. It translated across to media, and technical briefings and made it easier to identify 'what people wanted'.

Aligning evidence and join up with policy

Getting all the **evidence aligned** was the main issue within the time scales as there was not really a central point of contact, but rather differing strands e.g., TAC, CMO, PHW that needed to be pulled together. Policy teams would have to pull them together to facilitate difficult conversations and make tough decisions. Without a central point of contact it meant time and effort to collate across a range of analysist/science where sometimes the advice is conflicting. It was unclear who had the final say, were they the authority or was it their viewpoint which was being offered? There were some structures in place but the connections between them were unclear. The landscape of different governance structures and groups was difficult to navigate. There was no clear outline of how all the structures and groups came together and what their individual roles were. Often there seemed to be overlapping responsibilities, with similar discussions happening at each level. There were also too many meetings.

One suggestion for improvement would be to **draw together a 'super' group or cell** made up of all the relevant analysist/organisations. TAC/PHW/CMO did not have a joined-up approach and sometimes it seemed that relationship across all 3 were strained. A combined super group or cell would allow for a triangulation of thinking and consensus in terms of messaging and advice. As well as a one stop shop for policy engagement and discussion. Such a group could also lead on the underlying

Commented [HR(CS&TEW6]: And Ministerial engagement to put across the messages was also key. On the visitor economy side direct engagement with the experts and Ministers often completely changed the dynamic with the sector "getting it" in a way they did not from policy leads repeating the messages. It bought us understanding and buy in to better engagement

Commented [BB(R&R7]: redraft

Commented [OR(HPTAC8]: Might be helpful here to highlight that time was not a luxury – before covid advice papers would take months to write – sometime we had two days to bring together 'the science' alongside 'the policy' and then to publish. Two weeks was a v long time – one week probably the average

push for 'one version of the truth' from the evidence and the delineation of that narrative between experts.

It was observed that in both the testing and vaccination programmes, scientific advice didn't flow into the policy side but was discussed in other arenas, mainly with health or clinical professionals in isolation, which didn't allow for rounded decision making and often led to delays as advice had to be commissioned separately. To prevent lots of discussions happening, one interviewee suggested a **'One team'** approach. Must put the team/strategy in the middle to co-ordinate and to deliver. Rolls and responsibility must be clear. Science in the middle doesn't work.

There was also a difference between following the letter the scientific advice and using it to make decisions (or even ignoring it). Circumstances dictate the balance between what is realistic/achievable. For example, it was difficult to align the science with the operational actions or other policy considerations that argued a different approach – sometimes the 3 were at odds. Policy officials and stakeholders need to understand how to best use of evidence/science. Clinicians and scientist need to appreciate that their advice is not the only consideration.

Scientific advisors felt the **TAC structure** did not necessarily support engagement with policy. TAG meetings themselves ended up with lots of observers at lots of levels. Too many meetings which seemed to often cover the same questions and repetition of discussion, which is more of a general issue than just TAC.
Policy leads reported it could be hit and miss in certain meetings to get hold of the papers and you needed to rely on people remembering you to have things passed on and a lot of things [Delete –'got missed'] . and this created a risk that some things could have been missed

Trying to read through all the TAC papers or going to all meetings was not realistic. The wide-ranging approach of TAC agenda also meant it was tough for policy leads to keep up with the TAC outputs when very busy on policy/operational front. Often key information would be identified by accident, through unofficial channels or via relationships with individual analysists. For others, the need to ensure that nothing important was missed meant attending TAC became essential but at a cost of a long hour's culture and as noted above lots of observers at meetings.

One interviewee suggested there needed to be a process in place to **help target and filter the information** to the policy teams/leads as it emerged. It could have been made clear to policy teams when discussions would concentrate on an issue directly related to that team. i.e. focused communication.

Timing and co-ordination of expert advice could also be challenging. Policy decisions had to be made very quickly and often at a 4 nations level. Analytical advice was not able to keep up with these timescales. Cabinet papers were being written to tight deadlines and the scientific papers were often available only at the very last minute. All that could be done in those circumstances was to ensure thought they were no significant discrepancies between the policy advice and the scientific advice, but the challenge of these timescales meant the final peer-reviewed evidence was not

Commented [OR(HPTAC9]: I think there is something in here about need for regular strategic discussions and sharing of commissioning for advice – you might want to highlight the recent reformulation of HP and ongoing strategic reviews – would be good to flag with Sioned

Commented [OR(HPTAC10]: Think we need to be careful here – we did try to embed TAC staff in important groups e.g. Simon Rolfe in testing – but we couldn't be in every meeting

Commented [OR(HPTAC11]: Good point here – it would be god to expand to include more detail on other considerations for a balanced policy. Btw I thought Scotland did a good job with their balanced scorecard approach

Commented [OR(HPTAC12]: Important point here about membership (why people are attending) also sharing agenda's in advance – again time/staffing levels didn't help us often

Commented [AJ(LGLGFR13R12]: Is the point here also about the fact that TAC should have had a mechanism to balance the emerging needs of policy with the emerging science in each meeting so that policy weren't left having to try and play catch up all the time.

Commented [OR(HPTAC14]: Would be good to explore further – could we record meetings, allow more observers.. or produce minutes quicker?

Commented [AJ(LGLGFR15R14]: Again, I think this is about the balance and make up of the discussions within the meetings/groups and what topics were chosen for further analysis. Maybe recording the meetings and producing a summary of what was discussed to go with it would allow for those interested to rewatch when appropriate.

Commented [HR(CS&TEW16]: Not sure this is the right place to make this point but it is vital , repeated requests for evidence, e.g. that hospitality was high risk in terms of spread, could not be met and become a running sore with the industry making engagement and implementation very hard.

informing the policy options as fully as it could have. The TAC peer review process of different data sets could also take five or six days old before it emerged which is a long time in Covid world.
Policy teams were not always clear when it came to analysing data what work in-house statisticians would do, what TAC would do, and what policy teams would be expected to pick up. Some people were spread very thinly and there was an ongoing need to understand each other's roles.

Balance of harms

Some policy leads felt that the balance of risk was always in terms of health and less about the other harms. For example, the risk of harm from Covid outweighed concerns about remote teaching. There were public health concerns that children were super spreaders and not sufficient attention was paid to the harm of children not being in the classroom. The proportionality was difficult to judge with children out of school for a long-time; young children in particular had difficulties with remote learning and developed learning difficulties.

Similarly, some felt slightly disappointed that the economic impact didn't figure as strongly at the start of the pandemic in terms of the balance of harms and the economy policy lines could have been stronger. The challenges are likely to be because the health data was very immediate and clear, but the economic and wider harms were likely to be realised in longer time in unknown ways.

Some sub-groups seemed to be reluctant to commit to actions or take decisions on approaches, which could be very frustrating. The independent nature of the scientific advice meant that judgements on approaches were not made – advice from scientists within WG on specific policy proposals would have been welcome. One of the main reasons for this was that the answer often depended on the question/perspective and the need to balance the various harms – while the 4/5 harms created a balanced and more rounded approach to issues it also created differing opinions when those harms were in effect valued differently by different participants of a group e.g., you agree to prevent transmission by reducing the flow of people through a hospital, but reducing flow means fewer people are treated for other health issues and this also causes harms. How do you trade off the balance of harms in these instances? Very difficult to work through and get the group to agree a way forward.

TAC advice incorporated the 5 harms in the advice e.g., papers on the economic harms and the balanced scorecard. Some harms are harder to evidence as some will take time to emerge in the future. Direct harms much easier to measure or attribute to Covid i.e., death now due to Covid versus indirect harms on people over the next 10 – 20 years in terms of missed education. The priority or weighting placed on the direct harms need to be balanced carefully or they become more prominent for decision making. Ultimately, an ethical framework setting out how the harms could be balanced or traded was absent.

Advising Ministers

Commented [OR(HPTAC17]: We did have a CYP and education group – it's an important point though as that group has now been stood down. You could also say the same for underserved groups

Commented [OR(HPTAC18]: Difficult as data is just not there – unlike SAGE we did have a socioeconomic subgroup and produced papers and advice on it – but it needs to improve

Commented [BB(R&R19R18]:

Commented [OR(HPTAC20]: This is a difficult one as it straddles the risk assessment part (describing hazard, risks, likelihood, impact) and risk management – we need to discuss this more I would suggest

For some policy leads the processes around submission of policy advice were not clear. Co-ordinating advice to Ministers meant lots of informal engagement with policy and analytical colleagues to ensure consistency of messages and information. Information was shared with PHW to make sure advice was aligned and double checked, but within WG there was no clear governance on how the scientific data was to be cleared or checked as there is with the KAS data or economic data. Having a small number of analysts to clear advice also created a bottleneck. A central contact point with a clear governance system, identifying those with the appropriate capability/expertise to provide the practical or applied scientific assurance was needed.

Policy leads believed that advice to Ministers must be well rounded and co-ordinated as it often needs to offer practical decision making by stitching together all the factors (comms, science, evidence, other policy areas). Direct scientific evidence was sometimes issued from TAC to Ministers, which would not be considered best practice as it failed to bring in wider implications. Ministers were briefed on modelling evidence prior to Cabinet and a decision being taken which was helpful, but without the wrapping of wider advice risked having a major impact on Ministers.
Some felt that TAC become too policy independent and resistant to policy questions. However, the Terms and Conditions of TAG was to provide independent advice to Ministers, and then to provide advice on the policy options to policy teams. Raising the question about whether the ToC were right, whether it worked for WG and how it fitted with the CSA role.

Within UKHSA, analysts and advisers were embedded in the policy structures and discussions, while in WG the scientific advisers were kept separate, meaning there was much less integration or creation of a shared understanding. Moving forward the role of Chief Scientific Advisors needs to be codified alongside consideration of the balance between independent advice and policy application.

Other Lessons learnt

Dangers of coming up with different approaches across other DA's. Maintaining cross border engagement is still key, even though we are not in a crisis mode.

Has there been sufficient evaluation of covid measures?

I-share is also not fit for purpose in terms of science and analytical data; it does not support some data types nor working quickly and sharing information. A central space for data that could be shared across analysist would be a big improvement. Improvements to the IT infrastructure to provide better analytics on desktops across WG would also be a benefit. At the moment there are too many different systems that don't talk to each other and need time to process, holding up even simple tasks. Specifically, the WG IT systems and laptops do not support 'R' and Python programming languages meaning that, unlike the UKG, NISRA or SG, the WG had no data models to begin with or the technical capability to develop them.

Commented [OR(HPTAC21]: This is helpful – might be worth referencing
Guidelines on the Use of Scientific and Engineering Advice in Policy Making (publishing.service.gov.uk)

Commented [OR(HPTAC22]: To a degree I disagree with this one. PHW colleagues were embedded in CMOs office – we worked with them. I'm not sure UKHSA was embedded in Government Departments. However we did have a UKHSA embed and a PHW lead official

Commented [AJ(LGLGFR23R22]: If this was the case and PHW colleagues were embedded in CMO office then this was not clear to the majority of policy teams, not did the link seem to offer any additional benefits in joined up thinking.

Commented [OR(HPTAC24]: Chief Scientific Advisers and their officials: an introduction (publishing.service.gov.uk)

Commented [OR(HPTAC25]: I think this warrant s fuller explanation or removing, there is much to this one and it could take up another chapter.

Commented [HR(CS&TEW26]: Also , was there sufficient evaluation at the time?

Commented [OR(HPTAC27]: I agree – we did have Objective Connect though – but we need to be able to access sharepoints

Annex 1

Those interviewed during May/ June 2022

Fliss Bennee	Co-Chair of Technical Advice Cell (TAC)
NR	Head of Special Projects
Brendan Collins	Head of Health Economics
NR	Deputy Director Schools and Covid
Jo-Anne Daniels	Director Test, Trace, Protect
Rob Holt	Deputy Director, Events
NR	Deputy Director, Economic Policy
Sioned Rees	Deputy Director Testing
NR	Head of Behavioural Science (Health Covid 19)
Claire Rowlands	Interim Director of Vaccines
Craiger Solomons	Head of Technical Advisory Cell
NR	Head of Covid Co-ordination - Social Policy
Tom Smithson	Deputy Director - Covid-19 Restart - 21 Day Review
Rob Orford	Chief Scientific Advisor, Health