Collecting clinical experience of homeopathic support in COVID-19, newsletter 16

Bayesian analysis of symptoms, 15th issue

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The previous newsletter was published two months ago. Since then, the number of case records underlying the new Bayesian mini-repertory for COVID-19 has increased from 416 to 504 cases and the number of medicines has increased from 50 to 54. The mini-repertory now contains five medicines. The next step will be to choose the best medicines to be added.

The Bayesian repertory

This newsletter aims to give feedback to homeopathic practitioners who send in their cases and reward them with an up-to-date outcome of the data analysis that is directly relevant for treating new patients. Our shared experience shows, after quantitative analysis, the prevalence of common symptoms in populations which respond well to various medicines. We are now able to observe differences between the medicines: the prevalence of a common symptom like 'headache' is above average in *Bryonia (Bry)* patients and *Gelsemium (Gels)* patients, and below average in patients responding well to *Arsenicum album (Ars)*, *Phosphorus (Phos)* and *Pulsatilla (Puls)*. The likelihood ratio (LR = prevalence in the medicine population / prevalence in the remainder of the population), indicates where this prevalence is above or below average. Intuitively, it is easy to understand that a prevalence above average increases the chance that the medicine will work if the patient has a headache and a prevalence below average decreases the same. As it happens, this is a rock-solid statistical fact, known as Bayes' theorem.

The Bayesian repertory makes common symptoms useful, especially if we can combine several of these. The combination of, say, three common symptoms can have the same importance as one keynote symptom, and many patients have more than one common symptom, precisely because these symptoms are common. This offers three new advantages for homeopathy:

1. We gain more certainty about our prescriptions by adding research outcomes
2. We can treat more patients successfully, adding patients who have only common symptoms
3. We can show the reproducibility of homeopathy by indicating to our conventional colleagues how to select those COVID-19 patients who are eligible for homeopathy

This mini-repertory is complemented by a web-based app to make the necessary calculations, see:

https://hpra.co.uk/

We tested the app (and the mini-repertory) with 18 well-described cases from Hong Kong.[1] It emerged that in nearly all cases the mini-repertory, with only 20 common symptoms, produced the same outcome as a standard repertorisation which included keynote symptoms, but with fewer symptoms – between a quarter and a half fewer than in the classic repertorisation.

[1] To, Ka Lun Aaron; Fok YYY. Homeopathic Clinical Features of 18 Patients in COVID-19 Outbreaks in Hong Kong. *Homeopathy*. 2020;109:146-162. doi:10.1055/s-0040-1710545.

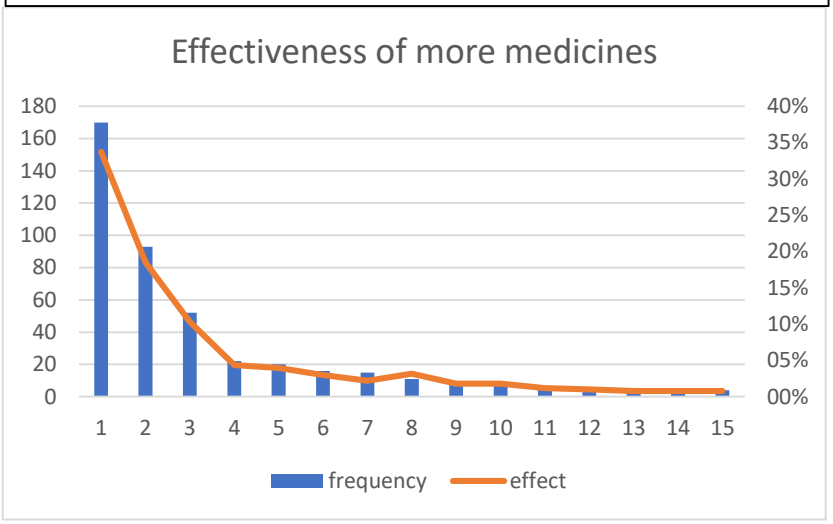
The next step

At present, the five medicines in the mini-repertory and the app reflect the knowledge derived from about 70% of all cases. Adding other medicines will have much less effect per medicine. Below, we show the medicines that were prescribed at least four times and the curve indicating their use. (Table 1 and Figure 1).

Table 1: Frequency of medicines

medicine	N
bry	170
ars	93
gels	52
puls	22
phos	20
nux-v	16
camph	15
bell	11
sulph	9
lob-p	9
merc	6
kali-bi	5
eup-per	4
rhus-t	4
mag-m	4
lyc	4

Figure 1 The effect of adding more medicines.



Five medicines cover 70.8% of all cases; adding three more medicines would include another 8.4% of all cases. However, we must remain vigilant and keep searching for other medicines that appear to be more useful than expected. The current data collection draws more attention to the five medicines; these are easier to find because they handle common symptoms better. There are several reasons why other medicines could also be useful in a considerable number of cases, such as:

- We are not sufficiently aware of such medicines
- More severe COVID-19 cases might require other medicines
- The virus might evolve

Here we encounter an important dilemma: To achieve sufficient reliability, we need enough cases (>20) of the same medicine from different practitioners; but if we choose indiscriminately from more than 100 medicines it will be very difficult to achieve such numbers. How can we manage this problem systematically and wisely?

First of all, we have three medicines that need just a few more cases to reach adequate numbers: *Nux vomica (Nux-v)*, *Camphora (Camph)* and *Belladonna (Bell)*. For these medicines, we have data about the prevalence of common symptoms, but we should still be careful about these prevalences because the numbers remain low and not all the data were collected prospectively. The prevalence of these symptoms per population is shown in Table 2; those clearly above average are underlined.

Table 2: Prevalence of some common symptoms in Nux-v, Camph and Bell, and in the whole population (all cases). Prevalences above average are underlined.

Symptoms	all cases	Nux-v	Camph	Bell
n=	*504*	*16*	*15*	*11*
fatigue	46.2%	25.0%	80.0%	9.1%
headache	36.3%	62.5%	20.0%	36.4%
throat pain	35.9%	37.5%	26.7%	54.5%
loss of taste and/or smell	21.8%	37.5%	20.0%	no data
diarrhoea	16.1%	31.3%	20.0%	no data
taste altered	9.1%	12.5%	33.3%	no data
productive cough	10.9%	12.5%	13.3%	54.5%

Table 2 shows for example that in *Bell* cases the prevalence of 'productive cough' is above average (higher than in 'all cases'). We must be aware of possible confirmation bias: 'fatigue' is known to be a keynote for *Camph* and 'throat pain' is a keynote for *Bell*. The higher prevalence of 'headache' in *Nux-v* compared to *Bell* is surprising, but we must be careful with this finding because of low numbers. We should not exclude *Bell* if 'headache' is present, but also think of *Nux-v*.

Although the indication of medicines by the prevalence of common symptoms in fewer than 10 cases might be misleading, such medicines could nevertheless prove useful. Another sensible way of selecting medicines that could be more useful in treating COVID-19 is the consensus procedure, combining the experience of a larger number of practitioners. A good example is provided by a group from the state of Maharastra, India.[2] Their methodology comprised:

- Study of all available cases with the whole group
- Inventory of similarities/dissimilarities of various medicines
- Identify symptoms that indicate specific medicines
- Test this knowledge when treating new cases

Using this method, *Mercurius solubilis (Merc)* was found to be an eligible medicine. This methodology could be followed by other groups, preferably focussing on the medicines in Table 1.

Prospective assessment of symptoms

If we want to enrich our mini-repertory for COVID-19 with other medicines it is important to check all the symptoms that appear frequently in COVID-19 cases, listed below:

- Fatigue
- Fever, chill, or chill alternating with fever
- Runny and/or blocked nose
- Throat pain
- Pain in muscles, bones, head, back, etcetera
- Cough, dry or productive
- Dyspnoea
- Chest discomfort

[2] Vaishampayan S, Mutreja K, Lambe S, Shah J, Shaikh G. Mercurius solubilis as Genus Epidemicus for the COVID-19 Pandemic. *Homeopathy*. 2020;109. doi:10.1055/s-0040-1716336

- Pneumonia
- Loss of taste and/or smell
- Perspiration
- Fear/anxiety
- Confusion
- Restlessness
- More or less thirst than usual
- Diarrhoea, nausea

Threshold values and confirmation bias

For homeopathic practitioners, it is tempting to elicit from the patient all possible symptoms that could confirm the medicine they have chosen. This could lead to a lowering the threshold value for specific symptoms, resulting in over-estimating the prevalence of these symptoms in the respective medicine populations. This is called confirmation bias. Confirmation bias can also be caused by the patient who wants to convince the doctor that he/she is very ill and agrees to every symptom that indicates COVID-19 disease. As an example, the patient confirms the symptom 'cough' if he coughs only once a day, and did so for many years. This is clearly not a symptom to be noted in our database. As a rule of thumb, we can accept the symptom if we find it relevant for our differential diagnosis of eligible medicines.

There are several possible preventive measures against confirmation bias, such as:

- Check that the symptom has occurred only since the onset of the COVID-19 disease
- Check that the intensity and/or the frequency of the symptom is more than average or usual, depending on your clinical experience
- Guide the patient when filling in questionnaires
- Explain to the patient that you are searching for his/her personal characteristics in the disease

We suggest that you make a list of the COVID-19 symptoms mentioned under 'Prospective assessment of symptoms', and check these symptoms at the beginning of the consultation. If the symptom's intensity/frequency is more than average, you record it.

Causality of improvement

We would like to remind you that it is important to indicate why you think that the prescribed medicine caused the improvement of the patient, since most COVID-19 patients recover without treatment. If you prescribed more than one medicine at (nearly) the same time, the case cannot be used for evaluation of symptoms, even if it is a splendid case.

If you had to use other medicines because the first medicine clearly did not work, the case can be used for symptom evaluation of a subsequent medicine that did work. Please indicate why you think that this medicine worked.

Present status of the mini-repertory

Table 3 shows the current mini-repertory again, in case you missed the previous newsletter.

Table 3: Mini-repertory for COVID-19 symptoms of 02-08-2020, used for the second version of the app.

Symptoms	all (n=)	LRars	LRbry	LRgels	LRphos	LRpuls
n=	416	86	115	51	18	19
fatigue	210	1.20	0.82	1.84	1.11	0.30
dry cough	175	0.73	1.70	0.82	1.20	0.49
productive cough	45	0.96	0.57	0.70	2.76	2.61
dyspnoea	98	0.49	1.15	0.81	2.24	0.22
headache	141	0.67	1.44	1.54	0.81	0.93
fever	157	0.94	0.93	1.42	1.50	1.12
chill	90	0.59	0.65	4.14	0.76	0.97
perspiration	13	0.70	1.16	2.15	1.84	1.74
diarrhoea	63	1.42	0.82	1.04	2.33	0.34
throat pain	136	1.13	1.29	0.76	0.33	0.80
muscle/bone pain	145	1.09	1.30	1.08	0.47	0.44
anxiety/fear	90	2.44	0.40	1.10	1.58	0.97
loss of taste and/or smell	82	0.66	0.96	0.27	1.44	2.58
thirst	105	1.61	2.38	0.21	0.88	0.41
thirstless	41	0.30	0.54	4.13	1.75	2.90
nausea	31	1.83	0.76	1.06	0.74	1.44
back pain	20	0.20	3.20	0.38	2.46	1.00
abdominal pain	16	0.89	1.19	1.02	1.47	2.98
chest pain < cough	19	0.21	2.91	2.56	2.60	1.00
> open air	14	0.30	1.45	0.55	1.00	1.61
restless	10	5.00	0.65	1.00	1.00	1.00
desire cold drinks	13	1.00	1.64	0.60	6.63	1.00

We hope that even experienced homeopathic practitioners will set aside any feelings they may have about statistics and try the app to see what it does. They will see that it provides information which has never been available to them before. It also reflects their own experience if they have contributed to the database.

The database itself offers even more information, such as symptoms which can be used for confirmation following the recommendation of the app, such as:

- *Arsenicum*: sleeplessness; desire for warm drinks; fear of death
- *Bryonia:* thirst for large quantities; cough < talking; cough < deep inspiration; desire for rest; motion aggravates
- *Gelsemium*: involuntary urination from cough; heavy eyelids – cannot keep eyes open; chilly back; headache > profuse urination
- *Phosphorus*: gasping for air; chest discomfort; fear of being alone
- *Pulsatilla*: loss of appetite; wants to be held; bitter taste

Recapping requisites for case descriptions

We recap the minimum necessary data for this project:

- Severity of COVID-19 illness: Mild – Moderate – Severe – critical
- Is COVID-19 confirmed?
- Number of days between first symptoms and a deterioration of condition
- Medicine, with date of first intake
- Number of hours until onset of improvement and/or until absence of fever after first intake
- If possible at least 5 symptoms that were characteristic for the case
- Pneumonia on X-ray or CAT

Also check at the beginning of the consultation (**to prevent confirmation bias**):

- Fatigue
- Fever, chill, or chill alternating with fever
- Runny and/or blocked nose
- Throat pain
- Pain in muscles, bones, head, back, etcetera
- Cough, dry or productive
- Dyspnoea
- Chest discomfort
- Pneumonia
- Loss of taste and/or smell
- Perspiration
- Fear/anxiety
- Confusion
- Restlessness
- More or less thirst than usual
- Diarrhoea, nausea

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