Reading Assignments and Sources
Judaic Lecture Series, Molecular Biology & Genetics
Walder Science
(Some Hebrew texts and English translations
courtesy of Sefaria.org and Chabad.org.)

CLASS 4

(CLASS 3)

II. Do we find any mention of Microbiology or Genetics in the Torah?
A. All information is contained within the Torah

B. Statements of the Gemara and Midrash that address phenomena of disease transmission and inherited trains

Teshuvos Chasam Sofer, Yoreh Deah 159 and 173

... אבל המה נאמני' בדברים כללים שהמה מקובלים שיש כך וכך בעולם.... אך האמינו חז"ל בכלל הטבע להעיד שיש מציאות בעולם....

… But they (the medical establishment) are reliable regarding general matters that are accepted as being such-and-such in the world.... Our Sages relied on the general field of nature (science) to testify that there is such a reality in the world....

1. Kesuvos 77b

לא הדר עילויה מכריז רבי יוחנן הזהרו מזבובי של בעלי ראתן רבי זירא לא הוה יתיב בזיקיה רבי אלעזר לא עייל באהליה רבי אמי ורבי אסי לא הוו אכלי מביעי דההיא מבואה ריג"ל מיכרך בדז ועסיק בתורת R

ebbi Yoḥanan would announce: Be careful of the flies found on people sick with *Ra'atan*. Rebbi Zeira would not sit in the path of the wind from him. Rebbi Elazar would not enter his abode. Rebbi Ami and Rebbi Asi would not eat eggs from that alley (where someone with *Ra'atan* lived)....

Midrash, Vayikra Rabbah 16:3

רַבִּי יוֹחָנָן וְרַבִּי שִׁמְעוֹן בֶּן לָקִישׁ: רַבִּי יוֹחָנָן אוֹמֵר אָסוּר לֵילֵךְ בְּמִזְרָחוֹ שֶׁל מְצֹרָע אַרְבַּע אַמּוֹת, וְרַבִּי שִׁמְעוֹן אוֹמֵר אֲפִלּוּ מֵאָה אַמָּה. וְלָא פְלִיגִי מַאן דְּאָמַר אַרְבַּע אַמּוֹת, בְּשָׁעָה שֶׁאֵין הָרוּחַ יוֹצֵא, וּמַאן דְּאָמַר מֵאָה אַמָּה, בְּשָׁעָה שֶׁהָרוּחַ יוֹצֵא. רַבִּי מֵאִיר לָא אָכֵיל בֵּיעֵי מִן מְבוֹאָה דִּמְצֹרָע. רַבִּי אַמֵּי וְרַבִּי אַסִּי לָא הֲווֹ עָיְילֵי לְמְבוֹאוֹת שֶׁל מְצֹרָע. רֵישׁ לָקִישׁ כַּד הֲוָה חָמֵי חַד מִנְּהוֹן בְּמְדִינְתָּא מְרַגֵּם לְהוֹן בַּאֲבָנַיָּא אֲמַר לוֹ פּוֹק לְאַתְרָךְ לָא תִּזְהוֹם בְּרִיָּיתָא, דִּתְנֵי רַבִּי חִיָּא (ויקרא יג, מו): בָּדָד יֵשֵׁב, לְבַדּוֹ יֵשֵׁב. רַבִּי אֶלְעָזָר בְּרַבִּי שִׁמְעוֹן כַּד חָמֵי חַד מִנְּהוֹן הֲוָה מְטַמֵּר מִנֵּיהּ, עַל שׁוּם דִּכְתִיב: זֹאת תִּהְיֶה תּוֹרַת הַמְּצֹרָע, הַמּוֹצִיא שֵׁם רָע.

Rebbi Yoḥanan and Rebbi Shimon ben Lakish [have an apparent disagreement]: Rebbi Yoḥanan says, "It is prohibited to walk within 4 cubits to the east of a Metzora." Rebbi Shimon says, "Even 100 cubits." And they do not actually disagree. The one who says 4

cubits refers to when the wind is *not* blowing. The one who said 100 cubits refers to when the wind *is* blowing.
Rebbi Meir would not eat eggs from the alleyway of a Metzora. Rebbi Ami and Rebbi Asi would not enter the alleyways of the Metzora. When Reish Lakish would see one of them in the city, he would throw stones towards towards him, and say to him, “Go out to your place. Do not infect the people!”... When Rebbi Elazar the son of Rebbi Shimon would see one of them, he would hide from him....

Yedei Moshe on Vayikra Rabbah ibid. (Rav Yaakov Moshe Hellen Ashkenazi, 1625-1700 CE)
**במזרחו של מצורע**. פי' נגד פניו נקרא מזרחו ומשום הבל פיו הוא סכנה יותר גדולה.
“*To the east of a Metzora*” – Explanation: In the direction of his face is called “to his east”. And it is because of the breath of his mouth that it poses a very great danger.

Bechor Shor on Vayikra 13:46 (Rabbeinu Yosef ben Yitzchak of Orléans, 1140-1200 CE)
**בדד ישב**. שזה החולי מתפשט על בני אדם הרגילים אצלו, ולכך יהיה בדד, שלא ירגיל אדם אליו.
**מחוץ למחנה**. וגם זה מפני שלא יתקרב אצל בני אדם, מפני החולי גם מפני הטומאה....
“*He shall dwell isolated*” – because this disease is contagious to people tho regularly interact with him, and therefore he shall dwell isolated, so that people will not have frequent contact with him.
“*His dwelling place shall be outside the inhabited area*” – this, too, is so that he will not come close to other people, both because of the physical disease and because of the spiritual defilement....

2. Bava Kama 60b

עד בקר ת"ר דבר בעיר כנס רגליך שנאמר
ואתם לא תצאו איש מפתח ביתו עד בקר

Our Sages taught: When there is plague in the city, bring in your feet (i.e. into your home, in “lockdown”), as it says (Shemos 12:22), “And you, no person shall exit the opening of his home until the morning...”.

Maharsha there
... ודאי בדבר בעיר נמי טוב לפזר רגליו ולהמלט על נפשו אלא דה"פ כל זמן שאינו מפזר רגליו מן העיר יכנס רגליו לביתו ולא יצא ברחובות.
… Certainly, when a plague is in the city, is as better to flee from the city and save one’s self. Rather, the Gemara means that whenever one is unable to leave the city, then he should seclude himself in his home and not go out into the public areas.

Ben Yehoyada there

הנה מהרש"א ז"ל פירש הכונה אם אין אתה בורח חוץ לעיר למקום אחר אז תעשה תקנה זו להיות מוסגר בביתיך ולא תצא מפתח הבית. והרב עיון יעקב ז"ל פירש הכונה דהבריחה מן העיר היא טובה ונכונה קודם שנתחזק הדבר בעיר אבל דֶּבֶר בָּעִיר שנתחזק הדבר לא תועיל הבריחה שגם הדבר ילך עמהם למקום שהולכין וכמו שכתב מהרי"ל ז"ל (סימן נו"ן) וכן כתב הרב תורת חיים ז"ל עיין שם. ודע כל זה שכתבו המהרש"א ז"ל והרב עיון יעקב ז"ל הוא בְּדֶבֶר אבל בְּחֹלִי הקוליר"א אפילו אם נתחזק החולי בעיר, טוב שיברח וגם בזה לא יועיל ההסגר בביתו שבעיר יען כי זה החולי של הקוליר"א יזיק לאדם הפחד וההבעתה ויתהווה בו החולי מחמת הפחד וההבעתה אשר יפחד ונבעת ואומרים הרופאים מעשה בדרך משל ומליצה:

פעם אחת היה חולי הקוליר"א בעיר אחת גדולה וקודם שנתחזק החולי מצא אדם אחד את המשחית הממונה על חולי הקוליר"א ואמר לו כמה נפשות אתה רוצה ליקח? ואמר חמשה אלפים וסוף דבר מתו באותה העיר ט"ו אלפים באותו החולי, וימצא האיש ההוא לאותו המשחית ויאמר לו למה שקרת שאמרת אתה שליח על מספר חמשה אלפים ולקחת ט"ו אלפים? והשיב לא שקרתי כי לא לקחתי בחרבי על ידי אלא רק חמשה אלפים ואותם העשרה מתו מחמת רוב הפחד והבעתה שהיה להם בעבור החולי הזה בעיר עד כאן משל הוא בדרך מליצה להודיע שֶׁיֵּשׁ נֶסֶפֶּה בְּלֹא מִשְׁפָּט (משלי יג, כג) מחמת פחד והבעתה.ולכן טוב לברוח למקום רחוק כדי שלא ישמע באזניו ולא יראה בעיניו החולי השולט בבני אדם ויבא לידי פחד והבעתה ואז ילקה ח"ו, והשם יתברך ברחמיו יבטל כל גזירות קשות ורעות מעלינו ומעל כל ישראל ולא ישמע שוד ושבר בגבולינו ובגבול כל עמו ישראל ובלע המות לנצח ולא נוסיף לדאבה עוד אמן כן יהי רצון.

The Maharsha explained the intent as follows: If you do not flee outside the city to another place, then you should perform this measure, to remain secluded inside your home and not leave exit the door of your home. The Iyun Yaakov explained the intent as follows: Fleeing from the city is good and proper before the plague takes hold in the city. However, once "there is a plague in the city" – when the plague has strengthened its hold in – fleeing will no longer help, for the plague will follow them to wherever they go, as the Maharil (#50) writes, and so writes the Toras Chayim.

Know, however, that all this that the Maharsha and the Iyun Yaakov wrote applies specifically to a plague (*Dever*), but with regard to the illness of cholera, even if the illness has already intensified in the city, it is best to flee. Moreover, remaining quarantined inside one's home within the city will not help in this case, because the illness of cholera harms people by causing fear and panic, and the disease can develop in a person as a result of the fear and panic he undergoes. The doctors give a parable to teach this lesson:

Once, the cholera illness was found in a large city. Before the illness spread, a certain person found the Destructive Angel appointed over the cholera illness, and he asked him, "How many souls do you intend to take?"

He replied: "Five thousand."

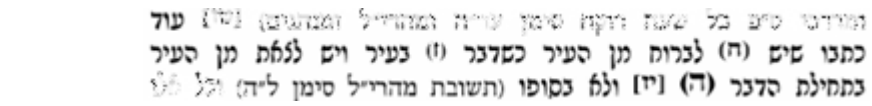
In the end, fifteen thousand people died in that city from the illness. The person found the Destructive Angel again and said, "Why did you lie, saying that you were sent for five thousand, and yet you took fifteen thousand?"

He answered: "I did not lie. I took with my own destructive power only five thousand. The other ten thousand died solely as a result of the intense fear and panic they suffered because of this disease in the city."

... Therefore, it is proper to flee to a distant place so that one's ears will not hear and eyes will not see the sickness dominating the people, causing him to

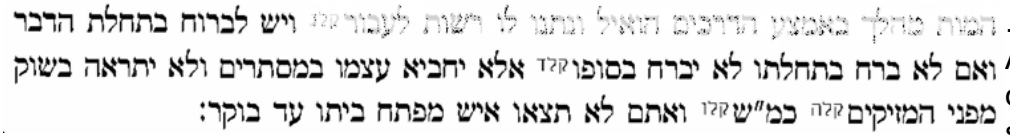
fall into fear and panic and thereby become afflicted, G-d forbid. May the Holy One, Blessed be He, in His mercy nullify all harsh and evil decrees from upon us and upon all of Israel. And may there not be heard any violence and destruction within our boundaries or the boundaries of all His people Israel, "and may death be swallowed up forever, that we will grieve no more." Amen, may it be His will.

Rema, Shulchan Aruch, Yoreh Deah 116:5



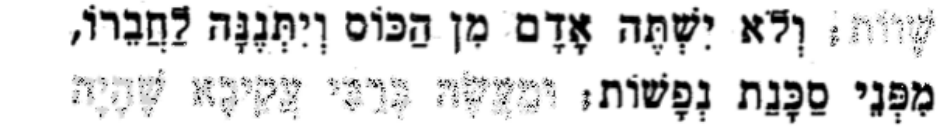
They (the Sages) further wrote that one should flee from the city when a plague is present in the city, and one should leave the city at the start of the plague and not at its end.

Shulchan Aruch ha'Rav, Choshen Mishpat, *The Laws of Protecting the Body and Soul*, #13



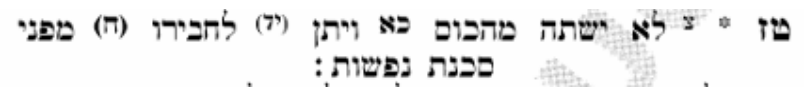
... And one should flee at the start of the plague, and if he did not flee at its start he should not flee at its end, but rather he should seclude himself in a private place, and he should not appear in public places because of the damaging agents....

3. Maseches Derech Eretz Rabbah, ch. 9 (ch. 7 in some editions), see also Tamid 27b



One shall not drink from a cup and then give it to his friend because of danger to life.

Shulchan Aruch 170:16 (see also 170:22)



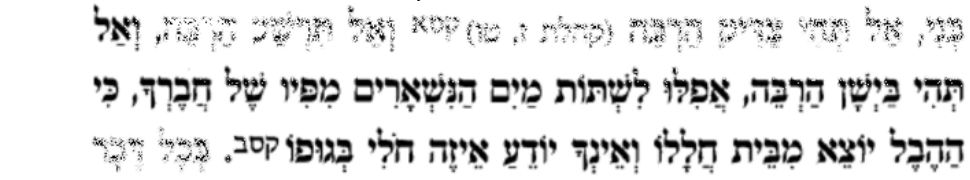
One shall not drink from a cup and then give it to his friend because of danger to life.

Mishnah Berurah #37

**ויתן לחבירו וכו'**. שמא מחמת הבושה יקבל חבירו ממנו וישתה בע"כ ואולי חבירו מאיס ליה לשתות ממה ששייר זה דאפשר דנתערב רוקו שם ויחלה עי"ז ולפ"ז דוקא אם נותנו לידו אבל אם מניחו לפניו והוא לוקח מעצמו לית לן בה וט"ז כתב אני ראיתי בצואת ר"א הגדול שמזהיר מאד שלא לשתות ממה ששייר חבירו כי שמא יש לו חולי בתוך גופו ויצא רוח מפיו לאותו שיור ע"ש ועיין לקמן בסכ"ב דמהני קינוח מקום נשיקת הפה או במים כששופך מהם מעט דרך אותו מקום ששתה בפיו ולכאורה סותר לדברי ר"א הגדול ואולי דר"א הגדול מיירי דהראשון ששתה היה אדם שאין אנו מכירין אותו אם הוא בריא דאז יש לחוש יותר [א"ר] ועיין בפמ"ג.

**And then give it to his friend**. ... as it is possible that his saliva became mixed in there and he may become ill because of this.... And the Taz wrote: "I saw in the [ethical] will of Rebbi Eliezer ha'Gadol (1st century CE) that he cautions very strongly against drinking from what his friend left over, because perhaps he has an illness within his body and a vapor exited his mouth into that leftover liquid," see there....

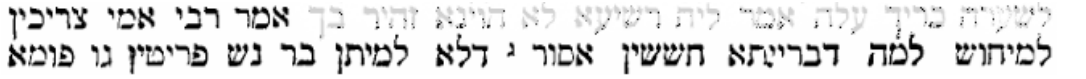
Text of Tzava'as Rebbi Eliezer ha'Gadol (*Sefer Orchos Chayim,* #56 in older editions, #51 in newer editions)



וְאַל תְּהִי בַּיְשָׁן הַרְבֵּה, אֲפִלּוּ לִשְׁתּוֹת מַיִם הַנִּשְׁאָרִים מִפִּיו שֶׁל חֲבֶרְךָ, כִּי הַהֶבֶל יוֹצֵא מִבֵּית חֲלָלוֹ וְאֵינְךָ יוֹדֵעַ אֵיזֶה חֹלִי בְּגוּפוֹ קסב.

And do not be overly bashful, even with regard to drinking water left over from your friend's drinking, because the breath leaves the inner part of his body [and enters the water] and you do not know what what illness(es) he has in his body.

4. Talmud Yerushalmi, Terumos 8:3



אמר רבי אמי צריכין למיחוש למה דבריתא חששין אסור ג דלא למיתן בר נש פריטין גו פומא

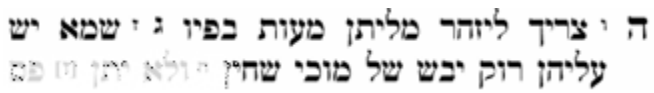
Rebbi Ami said: We must be concerned for what the people are concerned for. [Therefore,] it is forbidden for a person to place coins into the mouth.

Ran (Rabbeinu Nissim, 1290-1376) on the Rif (Avodah Zarah 10b)

**אסור ליתן פריטי גו פומא**. אסור ליתן מעות לתוך פיו מפני שיד הכל ממשמשת בהם ויש מהם חולים וזוהמתם דבקה בהם ואותה זוהמא קשה לאדם שנותנה לפיו.

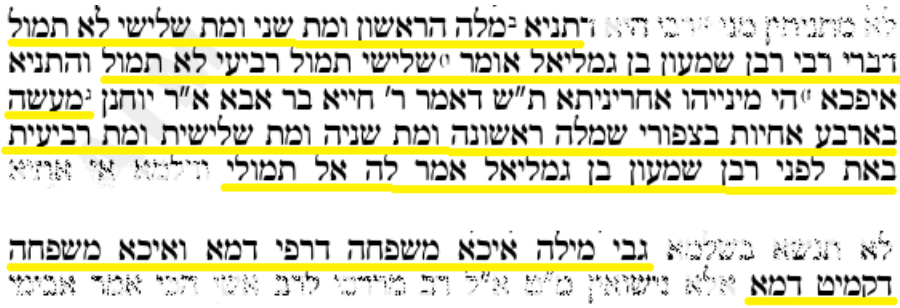
**It is forbidden for a person to place coins into the mouth**. It is forbidden to place coins into one's mouth because everybody's hand touches them, and their contamination adheres to them (the coins). And that contamination is harmful to a person who puts it into his mouth.

Shulchan Aruch, Yoreh Deah 116:5


ה יצריך ליזהר מליתן מעות בפיו ג שמא יש
עליהן רוק יבש של מוכי שחין

One must be careful to avoid placing coins into his mouth, for perhaps there is upon them dried saliva of sick people smitten with boils.

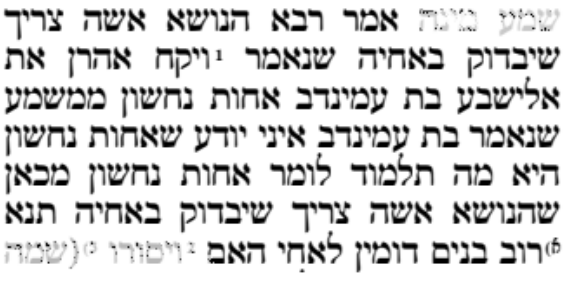
5. Yevamos 64b


דתניא מלה הראשון ומת שני ומת שלישי לא תמול
דברי רבי רבן שמעון בן גמליאל אומר שלישי תמול רביעי לא תמול והתניא
איפכא היי מינייהו אחריניתא ת"ש דאמר ר' חייא בר אבא א"ר יוחנן מעשה
באחות בצפורי שמלה ראשונה ומת שניה ומת שלישית ומת רביעית
באת לפני רבן שמעון בן גמליאל אמר לה אל תמולי


גבי מילה איכא משפחה דרפי דמא ואיכא משפחה
דקמיט דמא

It was taught in a Beraisa: If a woman circumcised her first son and he died, and her second son and he died, she shall not circumcise her third son. These are the words of Rebbi. Rabban Shimon ben Gamliel says: The third son she shall circumcise, but the fourth son she shall not circumcise.… An incident happened involving four sisters in Tzippori (who all gave birth to boys). The first sister circumcised her son and he died; the second [sister circumcised her son] and he died; the third [sister circumcised her son] and he died. The fourth sister came before Rabban Shimon ben Gamliel [to ask what she should do]. He said to her: “You must not circumcise him.”…
With regard to circumcision, there are families whose blood is loose (and does not coagulate properly), and there are families whose blood is thick (and coagulates quickly).

6. Bava Basra 110a


אמר רבא הנושא אשה צריך
שיבדוק באחיה שנאמר ויקח אהרן את
אלישבע בת עמינדב אחות נחשון ממשמע
שנאמר בת עמינדב איני יודע שאחות נחשון
היא מה תלמוד לומר אחות נחשון מכאן
שהנושא אשה צריך שיבדוק באחיה תנא
רוב בנים דומין לאחי האם

Rava said: One who marries a wife should [first] examine her brothers, as it says….
A Tana teaches: Most children are similar to the brothers of the mother.

7. Niddah 31a

פתאום ד׳ תנו רבנן ג׳שלשה שותפין יש באדם הקב״ה ואביו ואמו אביו מזריע הלובן שממנו עצמות וגידים וצפרנים ומוח שבראשו ולובן שבעין אמו מזרעת אודם שממנו ג׳עור ובשר [א] ושערות ושחור שבעין והקב״ה נותן בו רוח ונשמה ג׳וקלסתר פנים וראיית העין ושמיעת האוזן ודבור פה והלוך רגלים ג׳ובינה והשכל וכיוץ

> The Sages taught: There are three partners in [the formation of] a person: the Holy One, blessed is He, the father, and the mother. The father contributes the white matter which forms bones, sinews, nails, the brain, and the white of the eyes. The mother contributes the red matter which forms skin, flesh, hair (alt. Text: blood), and the black of the eyes. And the Holy One, blessed is He, puts into the person *ru'ach* (breath), *neshamah* (soul), the radiance of the countenance, the sense of eyesight, the sense of hearing, the ability of speech, the ability to walk, understanding, and knowledge.

III. Some practical Halachic questions relating to the spread of microbial pathogens

A. May I drink from the same cup as someone else?

1. If dangerous contagious diseases are not common today, does the Halachah still apply? Does the Halachah apply if the only concern is for catching a common cold, or other non-life-threatening illness?
2. If there is no indication that the first person is sick, can I drink from his cup? Are we concerned for latent or asymptomatic illness?
3. If I am willing to take the risk of getting sick, may I drink from his cup?
4. If it is a "Kos Shel Berachah" – a cup of wine or grapejuice used for a Mitzvah, such as Kiddush, Havdalah, or Birkat ha'Mazon – does the prohibition still apply?
5. If we are all in the same family, can we drink from the same cup (such as the Kiddush cup), or does the prohibition still apply?

Rav Shlomo Zalman Auerbach zt'l, in *Shemiras Shabbos k'Hilchasah* (vol. II, ch. 48, fn. 69)

(מח) שם במ״ב ס״ק עא. (מט) ושמעתי מהגרש״ז אויערבך שליט״א, דהרי מפורש בשו״ע סי׳ קע סע׳ טז, דלא ישתה מן הכוס ויתן לחבירו מפני סכנת נפשות, ועל סמך מה רבים מקילין בזה בכוס של קידוש, ברהמ״ז ושל ז׳ ברכות, ליתן את הכוס גם לאורחים, ומנין לנו דכוס של מצוה מותר, עכ״ל,

קידושא.

> I heard from ha'Gaon Rav Shlomo Zalman Auerbach (shlit'a) [zt'l] that it states explicitly in the Shulchan Aruch (170:16) that one may not drink from a cup and then give it to someone else because of mortal danger, and thus on what basis are many people lenient when it comes to the cup over which one recites *Kiddush*, *Birkas ha'Mazon*, and *Sheva Berachos*, to give the cup also to guests [to drink from], and on what basis is there to permit this even for a cup used for a Mitzvah?

B. May I go to a public place when I have a contagious sickness?
   1. Does going for a Mitzvah change the answer?

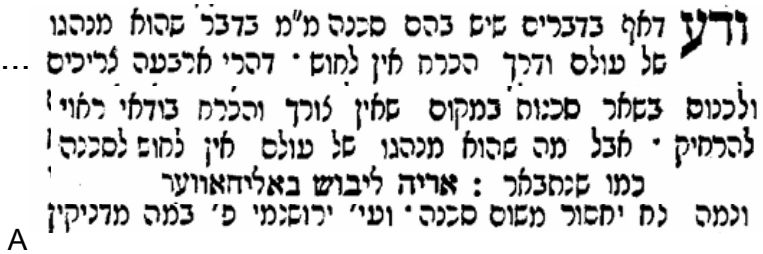
a. May I go to shul for Tefilah b'Tzibur?
b. May I go to the Beis Midrash to learn Torah?
c. May a student go to school?
d. May I go to a public place for a particularly important mitzvah, such as hearing the Shofar on Rosh Hashanah, or Megilas Esther on Purim, etc.?

2. If I need to leave the home for an important reason (to go to a doctor, to buy food, for an important exam at school), may I go?
3. How serious does the illness have to be to prevent me from going to a public place? Does this apply even to an ordinary cold, or only when there is a significant danger to the people around me?
4. Would taking precautions permit me to go to a public place? If I sit far away, wear a mask, or otherwise reduce the chance of transmission, may I go?
5. If I'm not feeling well but I don't know if I'm contagious, or if I was merely exposed to someone who is sick, am I required to avoid others?
6. Am I required to warn other people that I am contagious?

Rav Chaim Palagi, *Nishmat Kol Chai* (Choshen Mishpat #49)

> נשאלתי בימי חורפי ביחיד בית הכנסת אחד שהיה רופא חולים, ובזמן מגיפה, בר מינן, היה רופא לניגפים במחלה, והוא רוצה לבוא ולהיכנס בבית הכנסת, והיחידים מעכבים בידו שלא להיכנס, שהם יראים שמא יתנגפו בנוגע אליו.... תשובה: לכאורה נראה שהדין עם יחידי בית הכנסת שיכולים לעכב שלא להיכנס לבית הכנסת.
>
> I was asked in the days of my youth regarding a member of a synagogue who was a physician. During an epidemic, may we be spared from it, he was treating those afflicted with the disease, and now he wants to come and enter the synagogue, but the individuals are preventing him from entering, because they fear they might become infected by proximity to him.... Answer: Upon initial examination, it appears that the law is with the congregants, and they have the right to prevent him from entering the synagogue....

Rav Aryeh Leibush Bolichover (1801-1881), *Shem Aryeh*, #27 (p. 78)




> And know, that even regarding matters in which there is some danger, nevertheless with something that is common practice and is a matter of necessity, one need not be concerned [for the danger involved].... But to enter other situations of danger in a situation where there is no need or unavoidability, certainly it is proper to keep far away from it. However, regarding something which is common practice, one need not be concerned about danger, as has been explained. *Aryeh Leibush Bolichover*

Additional resources for Class 4:

*Nishmat Kol Chai* (Hebrew), Rav Chaim Palagi (1788–1868), vol. II, Choshen Mishpat, responsum #49. Full Hebrew text available at: https://he.wikisource.org/wiki/נשמת_כל_חי_(פלאג'י)/ב/מט

Minchas Asher Publications (in Hebrew and English). Various publications written by one of today's leading Poskim, Rav Asher Weiss, *shlit'a*, on the topics of proper conduct during a pandemic, vaccination, observing proper hygiene, etc. Available at: https://minchasasher.com/shiurim/pdf-publications/

*Kulam b'Chochmah Asita (Hebrew)* (*You Made Them All With Wisdom – On the wonders of the creation of man and the rest of the world's creatures from our teachers, the great Sages of Israel, accompanied by testimonies from medical professionals*), Rabbi Moshe Avidan, Jerusalem, 2016. Available at: https://tablet.otzar.org/#/b/614847/p/3/t/17770.415064376887926 2/fs/mn_e3794e40-41c5-4f88-aaec-b95fe3dc0bab/start/0/end/1/c/1786220150065

*Biblical and Talmudic Medicine*, Dr. Julius Preuss (translated by Dr. Fred Rosner). Sanhedrin Press, 1978. (Originally pub. 1911.) Available at https://archive.org/details/juliuspreussbibl0000preu/mode/2up

*Sefer Brit Sterilit* (Hebrew), "Sterilization in Ritual Circumcision, In Light of Modern Medical Discoveries and Jewish Law", Rabbi Dan Yaakov Cohen, Jerusalem, 2022. Available at https://tablet.otzar.org/#/b/656295/p/31/t/17770.11111437383449241/fs/0/start/0/end/0/c

# Appendix

From the Hebrew book, *Kulam b'Chochmah Asita* ("*You Made Them All With Wisdom – On the wonders of the creation of man and the rest of the world's creatures from our teachers, the great Sages of Israel, accompanied by testimonies from medical professionals"*), Rabbi Moshe Avidan, p. 28. (Translation by Y. Shaw.)

**Microbiology, Tetanus, and Colds**

**The View of Science**: Louis Pasteur, who passed away 118 years ago, is credited with discovering bacteria and the profound damage they can cause to human health and to food. He proposed the innovation of boiling liquids used for drinking in order to destroy the bacteria within them (the term "pasteurization," referring to the process of boiling a liquid in order to kill the bacteria within it, such as "pasteurized milk") is based on his name). The use of vaccines to eradicate diseases and epidemics also developed from the discovery of bacteria, leading to the vaccine for tetanus, which is caused by contaminated metal.

**The View of our Sages**: Once again it is clear that the Sages of truth, our Chachamim of blessed memory, were aware of the existence of creatures invisible to the naked eye, and therefore they warned against behaviors likely to transmit them from person to person, such as their warning in Tractate Derech Eretz (c. 7), "A person should not drink from a cup and then give it to his friend, due to danger to life."

They also suggested "pasteurizing" liquids, before drinking them, through bringing them to **a full boil**, while at the same time they warned against **partial heating** of the liquids, which actually causes bacteria to multiply. They expressed this very sharply when they said in Bava Metzia (29b): "Better to drink a cup of sorcery than to drink a cup of lukewarm water," meaning that it is better to drink a witch's potion than a cup of lukewarm water that was not fully boiled. Rabbeinu Chananel there explains: A cup of lukewarm water that was not properly heated is very damaging to the body.

Furthermore, we find an allusion to the concept of vaccination, which uses the bacteria themselves (when weakened) to cure the sick, in the words of our Sages: "If someone was bitten by a rabid dog, they should feed him from a piece of its liver" (Yoma 83a, 83b). That is, introducing a piece of liver infected with the disease into the patient's body in anticipation that the body will develop antibodies, which will ultimately suppress the rabies virus that entered the patient's body through the dog bite.

Due to the severity of tetanus, Chazal permitted treating a person injured by iron on the Sabbath (Avodah Zarah 28a).

Regarding colds, our Sages warned us to avoid conditions where bacteria are present so as not to contract them. Even though we know that illnesses and their cures come from Heaven, as stated in Nedarim (41a), "Rebbi Chiya bar Abba said: Greater is the miracle performed for a sick person than the miracle performed for Chananyah, Mishael, and Azaryah. For Chananyah, Mishael, and Azaryah, it was an ordinary man-made fire, which anyone can extinguish; but the fever of a sick person is from Heaven, and who can extinguish it?" Nevertheless, regarding colds, the Sages place the responsibility on man himself, who must take care not to be infected by bacteria and viruses that cause colds, as per their decisive statement in Kesuvos (30a), "Everything is in the hands of Heaven except for [avoiding] cold drafts and hazards (*tzinim u'fachim*)." The verse in Mishlei 22:5 says, "*Tzinim pachim* are in the path of the perverse; he who guards his soul will distance himself from them." Rashi (Kesuvos 30a) explains that "*tzinim pachim"* refers to cold and heat that sometimes come through negligence (of a person who is not careful).