

Cantonal tuberculosis activities 2021

Report from the Tuberculosis Competence
Centre of the Swiss Lung Association

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LUNGENLIGA SCHWEIZ
LIGUE **PULMONAIRE** SUISSE
LEGA **POLMONARE** SVIZZERA
LIA **PULMUNARA** SVIZRA



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Glossary

Abbreviation/Terms	Meaning
IP	Index patient
CP	Contact person
DOT	Directly-observed therapy
CI	Contact investigation
TBI	Tuberculosis infection
TB	Tuberculosis
FOPH	Swiss Federal Office of Public Health
SLA	Swiss Lung Association
KAZA	Cantonal medical office
PDMS	Patient data management system
MDR-TB	Multidrug-resistant tuberculosis
SEM	State Secretariat for Migration
FAC	Federal Asylum Centre
IGRA	Interferon gamma release assay
TST/TT	Mantoux tuberculin skin test
COVID-19	Disease after infection with SARS-CoV-2

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1 Introduction

Tuberculosis (TB) is a transmissible bacterial disease that is notifiable in Switzerland. In this sense, tuberculosis affects not only the sick person (index patient, or IP), but also those around them. People who were in close contact with the IP are called contact persons (CP). Due to the possibility of transmission to the environment, tuberculosis also has consequences for public health, which in Switzerland must be protected by the federal government and the cantons. Chart 1 shows the different stages in tuberculosis control and prevention in simplified form.

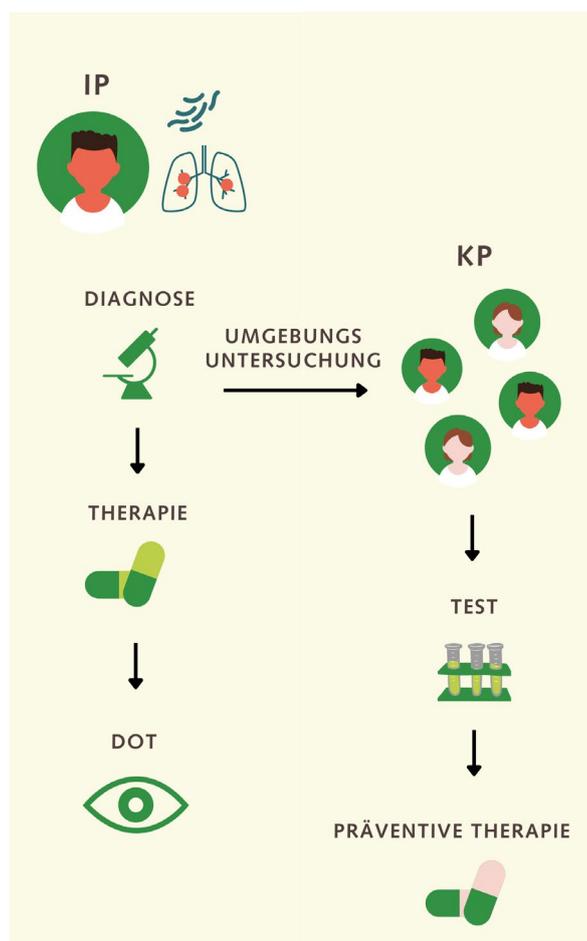


Chart 1: Stages of tuberculosis control and prevention in Switzerland. The left branch shows the diagnostics and treatment of sick index patients (IP). The right branch can be collectively referred to as the contact investigation (CI). This work is carried out by the cantonal TB services. The contact persons (CP) are tested for TB infection where there is an increased risk of infection. If the test is positive, preventive therapy is proposed after weighing the benefits and risks.

Procedure for index patients

The IP receives treatment due to active tuberculosis according to the specifications of the National Tuberculosis Manual, which serves as a medical guideline. In some cases, directly-observed therapy (DOT) is also prescribed. This is discussed in more detail in Chapter 5. The contact investigation (CI) is initiated as soon as possible after the diagnosis of a contagious form of tuberculosis. This is organised and conducted by the cantonal TB services on the orders of the cantonal doctor.

Procedure of the contact investigation

Contact persons (CPs) of an IP who have become infected with the tuberculosis bacterium are referred to as suffering from a tuberculosis infection (TBI). These people are not sick, just infected. The aim of the contact investigation (CI), which can be ordered after identifying a sick person, is to find such infected contact persons, advise them and preventively treat them in an appropriate way. In the context of an CI, CP can be tested using two different tests: the tuberculin skin test (TST) or the IGRA (interferon gamma release assay,

colloquially also blood test). The use of the two tests is described in more detail in Chapter 4. If contact persons test positive for the tuberculosis bacterium, they can take preventive therapy to prevent the outbreak of the disease. Details can be found in Chapter 4.8.

Responsibilities in TB control and prevention

In Switzerland, the cantons are responsible for most public health measures. All cantons, with the exception of Basel-Stadt and Bern, delegate the measures to the responsible cantonal Lung association. The key figures for the services of the TB specialist services agreed upon with the respective canton can be found in Chapter 3.1.

The FOPH commissions the Swiss Lung Association, which operates the Tuberculosis Competence Centre on the basis of a mandate, to develop guidelines and to coordinate the activities of the cantonal TB services. The preparation of this annual report on the activities of the TB services is part of the agreement between the FOPH and the SLA. The data is also presented and discussed as part of nationwide training courses and at the international TB symposium. They also serve the cantons, as most important clients, as a guide and monitoring tool.

Since 1 January 2016, the FOPH has been requesting the treatment outcomes of tuberculosis patients from cantonal doctors after the end of treatment. Since then, the evaluation of this data has been the responsibility of the FOPH and is therefore not addressed in this report.

2 Methodology

Data on tuberculosis cases (including information on the IP, diagnostics, bacteriology and treatment) and on the CI (information on contact persons, place of contact and type of relationship with the tuberculosis case and the result of the test) are generally recorded in the patient data management systems (PDMS) of the cantonal TB services.

The specific data that can be recorded by the TB services depends on both the documents made available to them (e.g. laboratory reports and treatment outcomes), and on the mandate agreement between the respective health service and the cantonal TB service, in which the orders are regulated (cf. Chapter 3.1, Fig. 1). The agreements are negotiated on a cantonal basis.

Data from the RespiGO PDMS (applies to the cantons UR, SO, BL, SG, AI, AR, AG, GR, GL, ZG, LU, SZ, NW, OW, VS, JU, TI) is evaluated using a Business Intelligence tool.

Data of the cantons that use a different PDMS (applies to the cantons BS, BE, NE, VD, TG, SH, FR, GE, ZH) is queried annually using an Excel table and manually integrated into the overall evaluation of all cantons.

Where necessary, incorrect or inconsistent data entries were checked for plausibility and corrected manually. IP from abroad and those who could not be assigned to a canton were excluded from the data analysis. In order to prevent such erroneous information, where possible, data entry was controlled in the PDMS using mandatory or predefined input fields. This was not implemented in all PDMS and consequently has an impact on the existing data quality.

A contact investigation is considered to have been conducted if at least one contact person of an index patient has been tested for tuberculosis infection. In practice, there are also contact persons who were contacted but ultimately not tested. These CI are not highlighted separately in the report, but would be visible in cantonal statistics on activities for 2021.

The following charts refer to different groups of IP according to the evaluation:

- All TB cases reported to the FOPH (357)
- TB cases reported to TB services (297)
- TB cases with a CI (181) or all pulmonary cases (202)

The total n and the respective IP group is specified in the chart titles.

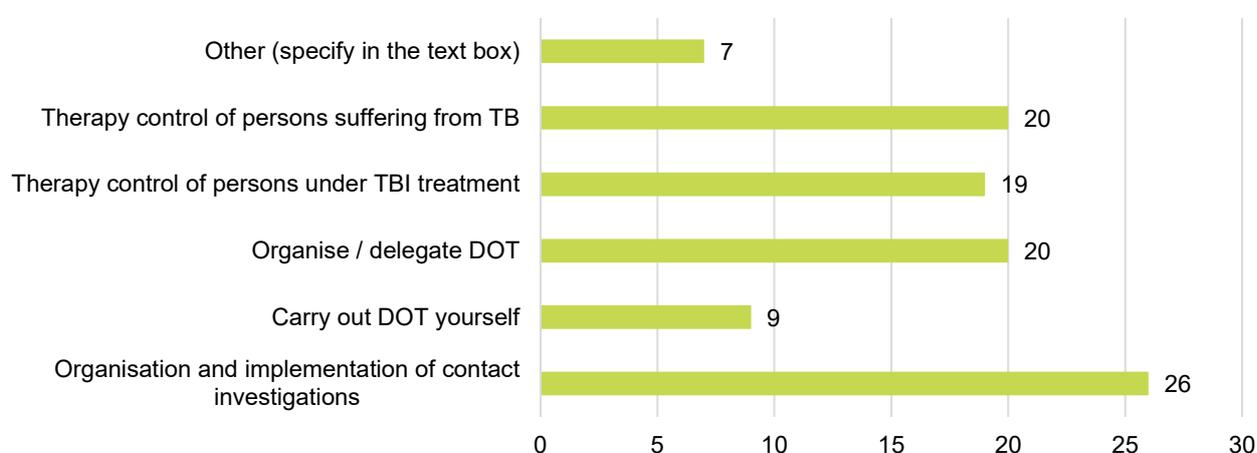
The data presented below refers to the years 2017–2021. The data was processed and evaluated anonymously. As contractually agreed, in the present report, the Swiss Lung Association provides the FOPH with consolidated data on the results of the activities of the associations for each canton (DOT, CI, tuberculous infection (TB) treatments) and additional data on tuberculosis work in Switzerland, which is another benefit for the readership of this report.

3 Key figures on the tuberculosis work of the tuberculosis services

3.1 Agreed activities of the cantonal tuberculosis services

In July 2022, the cantonal TB services were sent an online survey asking for the following information. Each canton and half-canton are counted as a TB service in the online survey because there is a contractual agreement between the cantonal medical office (KAZA) and the TB service for each canton and half-canton.

Fig. 1: Tasks of the TB units on behalf of the KAZA



What all TB services have in common is that they have the task of carrying out CI as part of their performance mandate from the cantonal health service (Fig. 1). In the canton of Basel-Stadt, the cantonal medical office provides these services on its own. In Bern, the Inselspital hospital takes on this task. All 26 TB services stated that they had been commissioned to organise and conduct CI. Twenty organise or delegate a DOT (directly-observed therapy) to external partners; only nine of the TB services also conduct this themselves. This is mostly – but not exclusively – the case in the larger TB services. The indication ‘other’ mainly refers to screenings in large companies or schools, which are additionally offered by some TB services.

The tasks have changed only minimally compared to the 2020 survey. Now, one fewer specialist service states that they conduct DOTs themselves compared to the previous year. The number of TB services that support patients with active TB has increased by one.

Fig. 2: Reported TB cases divided by category

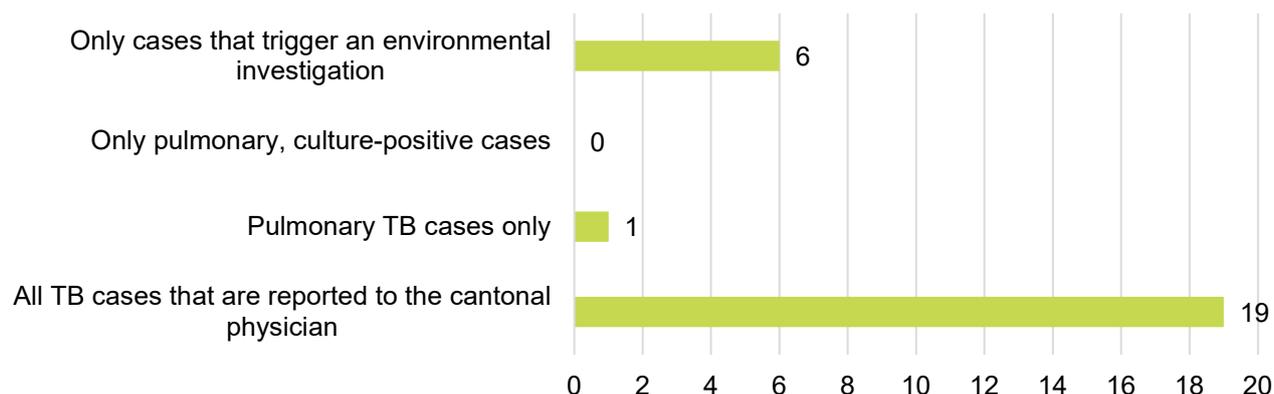


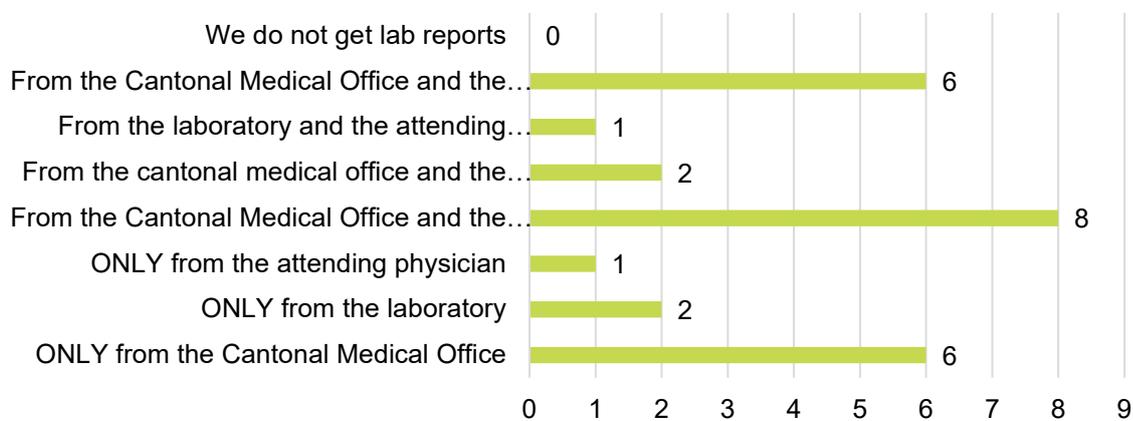
Fig. 2 shows about which tuberculosis cases the TB services are informed by the cantonal medical office. It is gratifying to see that all TB cases known to the KAZA have been reported in 19 cantons. This suggests a good collaboration between the institutions and shows an optimal flow of information. For a national overview of tuberculosis control, it makes sense to report all cases to the cantonal TB service, even if this does not always result in an order for a CI. In six cantons (2020: seven) only tuberculosis cases that trigger a CI are reported. Only in one canton are only the pulmonary cases reported.

Fig. 3: Availability of laboratory reports



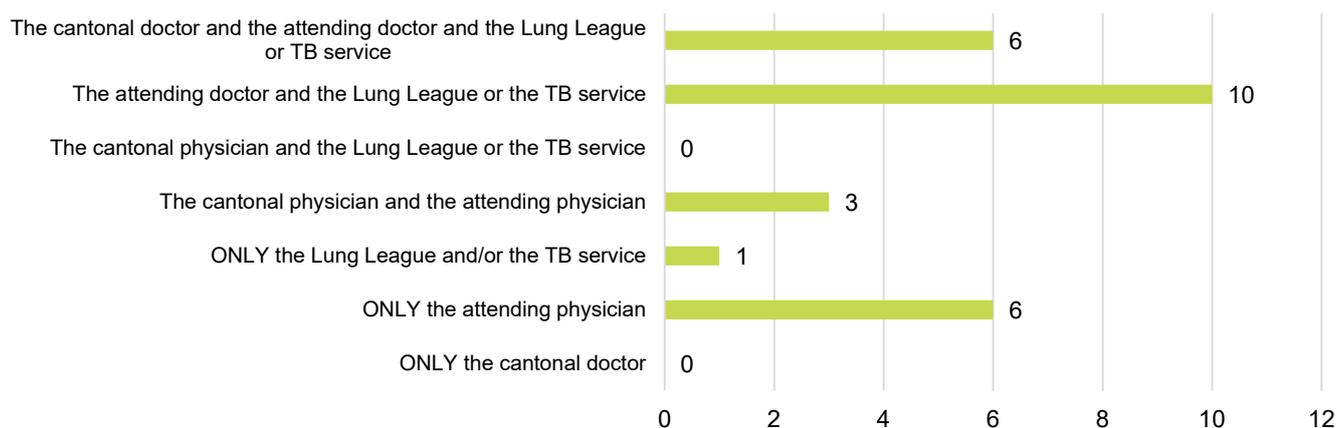
The TB services receive the laboratory reports for the reported TB cases from the responsible laboratories or from the cantonal medical offices (Fig. 3). Nineteen of the TB services receive this without asking, while the remaining seven only receive it on request. This figure has improved significantly compared to the previous year, when 13 specialist services stated that they only received laboratory reports on request.

Fig. 4: Laboratory report sender



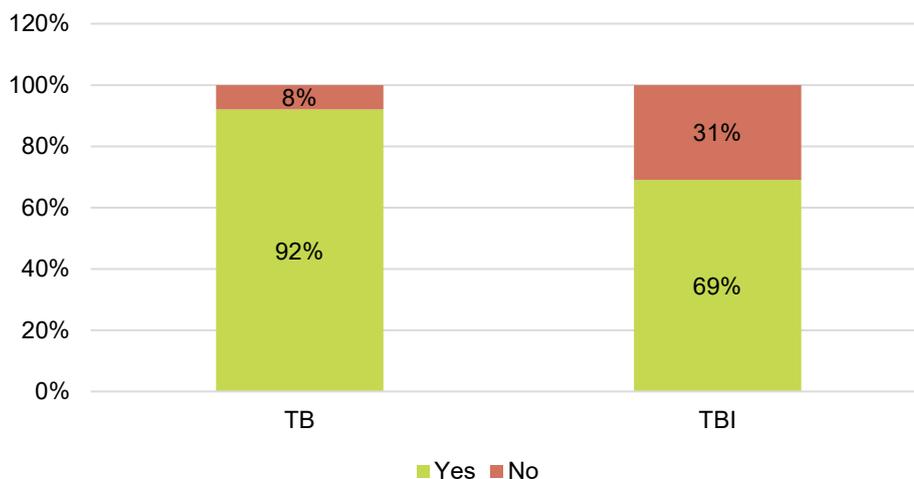
It was also asked from whom the TB services received the laboratory report (Fig. 4). The majority of the services receive the laboratory report directly from the responsible KAZA and the laboratory (n=8). Six services receive laboratory reports from all three possible partners. It is positive that no TB service states that it does not at all receive the laboratory reports.

Fig. 5: Decision-maker of a DOT



The question of who is involved in the decision to conduct a DOT is also of interest (Fig. 5). As shown in Fig. 1, all 26 TB services have been commissioned by the cantonal doctor to organise DOT or to conduct them themselves. Most decisions are made by the attending physician together with the TB service (10) or by all three parties together (six) (Fig. 5). It should also be noted that in one canton this decision is made solely by the TB service.

Fig. 6: Obention of treatment results



The question of obtaining the treatment outcomes (Fig. 6) was also asked online. Their evaluation is the responsibility of the FOPH, which receives the results from the KAZA or the attending physician. In certain cantons, obtaining the treatment outcomes from the responsible doctor is delegated to the TB services.

In 2021, 92% of all TB services collected treatment outcomes for TB therapies, with only 8% reporting that they did not. For TBI treatment outcomes, 69% of TB services did collect results, while 31% did not.

In addition, it was asked when in time the TB services requested the treatment outcomes. In almost 90% of cases, this happens immediately after the end of therapy. It makes sense to do this as soon as possible, since the case can only be closed in the PDMS once all laboratory results and treatment outcomes are available.

Finally, the information from the online survey shows that the cooperation between the cantonal TB services, the KAZA and the attending physicians works well. The tasks are clearly defined and treatments, as well as CI or DOT, are coordinated and carried out together. The content of the [TB Manual](#) published online is checked annually in accordance with the processes and specifications of the WHO and the FOPH for optimal care and treatment of TB patients and their contact persons, and updated if necessary. The response rate of 100% is very pleasing. This shows that the Tuberculosis Competence Centre works well with the cantonal TB services and that the flow of information is guaranteed.

3.2 Financial and performance metrics

The key figures, an evaluation of which is shown in Fig. 7-11, were evaluated directly by the cantonal lung associations (all except GE) that are connected to the controlling system. In addition, the Swiss Lung Association does not have any comparable metrics for the externally operated services in the cantons of Bern and Basel-Stadt.

There are three tuberculosis services that have contracts with several cantonal medical offices: the AG Lung Association (also with BL), the SG Lung Association (also with AR and AI) and the Central Switzerland Lung Association (with LU, OW, NW, SZ and ZG). However, these contracts are not evaluated separately for the key financial figures.

The TB services (excluding the BE, BS and GE services) worked a total of 9,143 hours in 2021. This corresponds to 4.9 FTE (9,074/basis 1,850 working hours/year) or 494% full-time equivalent. Compared to the previous year, this number has decreased by around 0.5 FTE.

The full costs for all TB services in 2021 were around CHF 1 million, of which around CHF 0.4 million are attributable to direct personnel costs and CHF 0.1 million to the provision of services to third parties (e.g. screenings). The remaining CHF 0.5 million is divided between infrastructure charges, material costs, overhead costs and other areas. The public sector (service contracts with the cantonal medical offices) covered around 85% of the full costs. The minimal negative balance was covered by other sources of income, such as income from screenings or the cantonal lung association's own funds.

Fig. 7: Absolute revenue and costs by TB services 2021

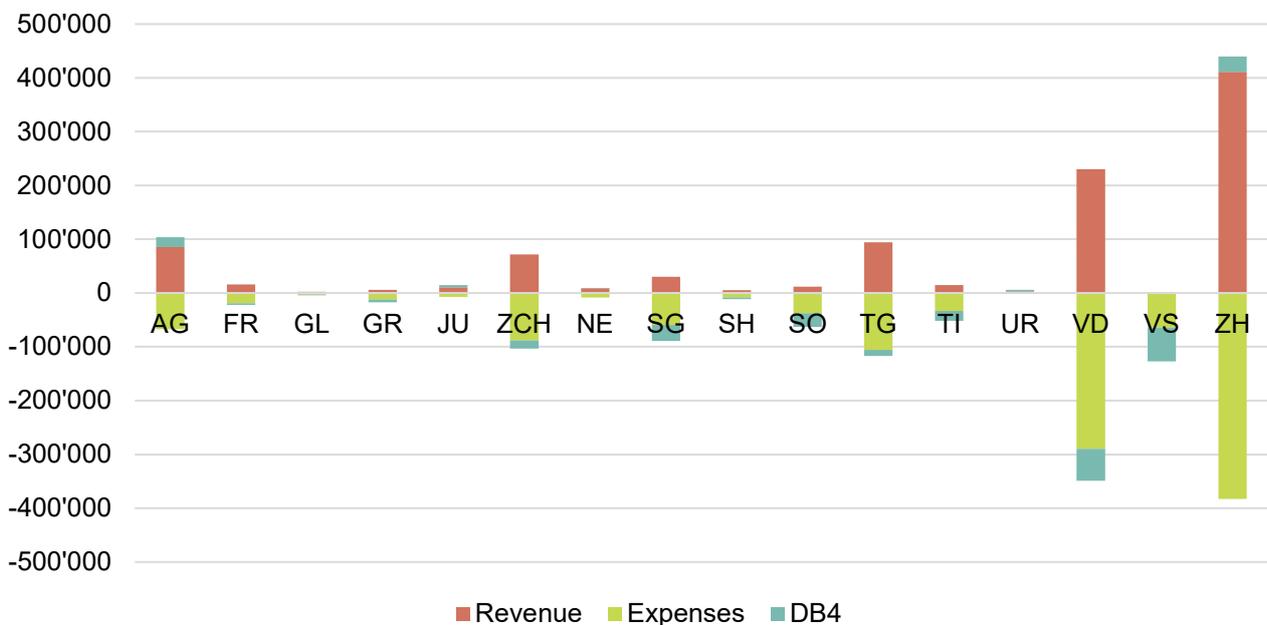
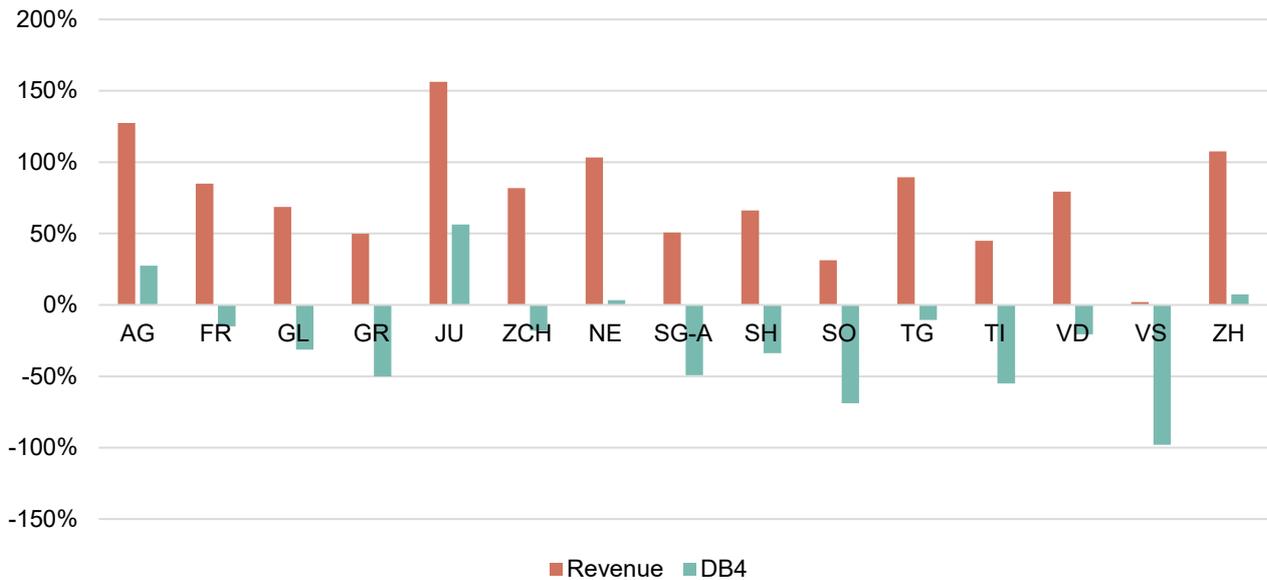


Fig. 8: Revenue and DB4 as a percentage of total costs



Note on Fig. 8: Canton UR is not shown here because the percentage DB4 is +2865% due to the very small absolute numbers, and this would distort the representation.

However, the cost recovery ratio (shown here as DB4 or contribution margin 4) varied greatly from canton to canton (Fig. 7 in absolute figures and Fig. 8 as a percentage of total expenditure). Five TB services have a positive DB4, namely the cantons of Aargau, Jura, Neuchâtel, Uri and Zurich. That is two services more than in the previous year. The remaining TB services show a negative DB4 and a cost recovery ratio of between -11% and -98%. The spread between the cantons is therefore correspondingly high. It is exciting to see that the DB4 does not necessarily correlate with the number of TB cases or the size of the TB service. As large specialist services, ZH or AG have a positive DB4, while GL or GR, for example, tend to fall more negatively as they are rather small specialist services. This may also have something to do with the agreed remuneration from the cantonal medical offices (see Fig. 1).

Fig. 9: Activities as % of total working time

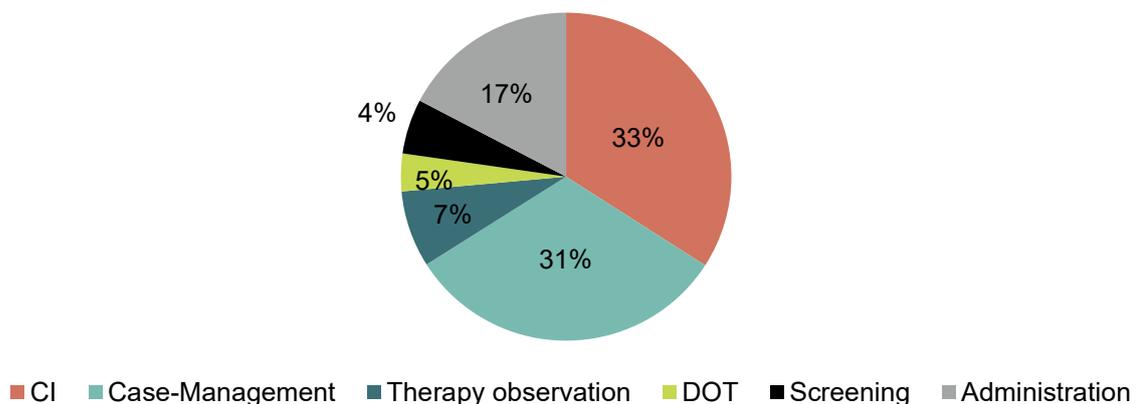
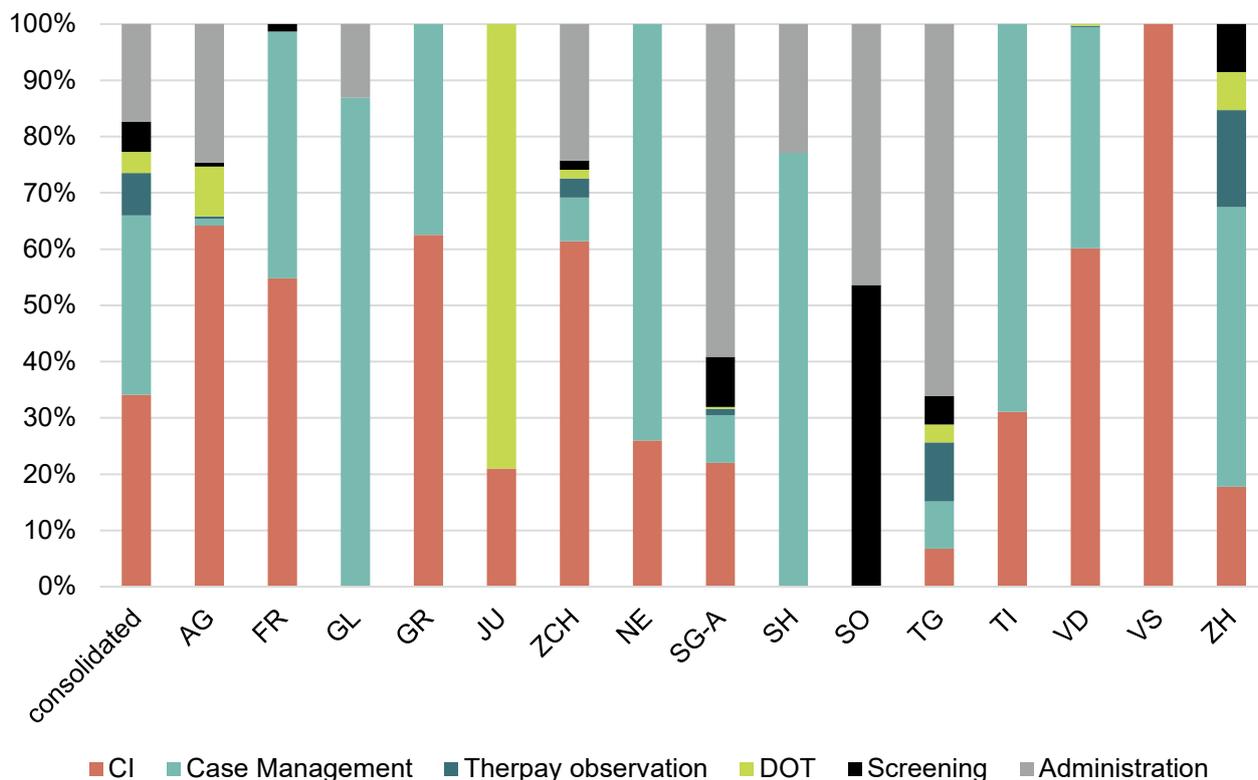


Fig. 9 provides information on how working hours are distributed across the various areas of activity across all services. The largest shares are accounted for by contact investigations (minus 6% compared to the previous year) and case management (+6%). The times for administration have fallen slightly compared to the previous year (-3%).

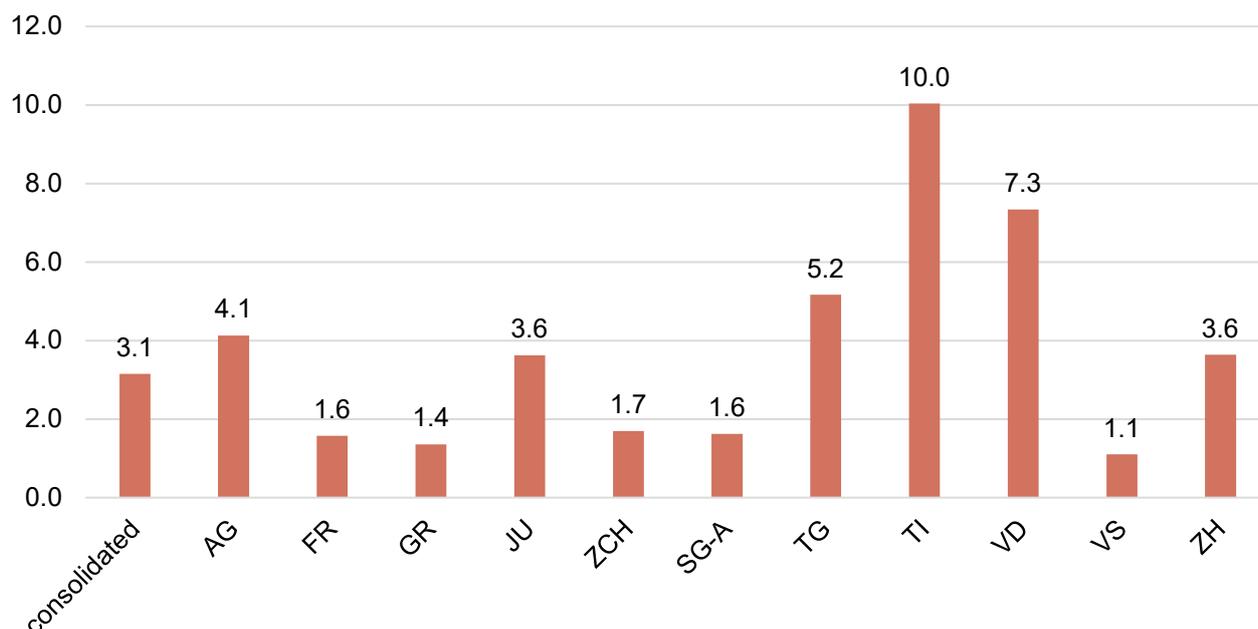
Fig. 10: Activities as a percentage of total working time



The differences between the cantons are large, as Fig. 10 shows. Cantons with no reported TB cases in 2021 were not included in the figure.

It can be assumed that the efforts for the provided services are not recorded in the same way in every canton and/or are not carried out in the same way, depending on the contract with the cantonal medical office. For example, therapy monitoring activities may have been recorded under case management or CI. This also applies to the recording of administrative activities, which are only reported separately by seven TB services (AG, GL, SO, SG, SH, TG, ZCH). In 2021, the cantonal TB services were sensitised to the correct recording of working hours and their distribution to different funding units. These training courses will be continued in the years to come.

If the time invested per CI is considered, this varies between four and 46 hours (mean value 19 hours), which naturally depends on the scope of the CI. There are CI with only one person tested, and some with over 100 people. This key figure also depends on the way in which the respective canton records the working hours per cost centre.

Fig. 11: Average number of hours per person tested

If the time invested per person tested is compared (Fig. 11), further differences emerge. This may have something to do with the fact that certain TB services conduct tests themselves, while others have their contact persons tested by their general practitioner. It also makes a difference whether or not they follow up TBI treatment and how accurately they record the treatment outcome. In addition, contact persons who have been contacted and informed but ultimately not tested also generate expenses that are booked as part of the expenses for a CI, but are not visible in this evaluation.

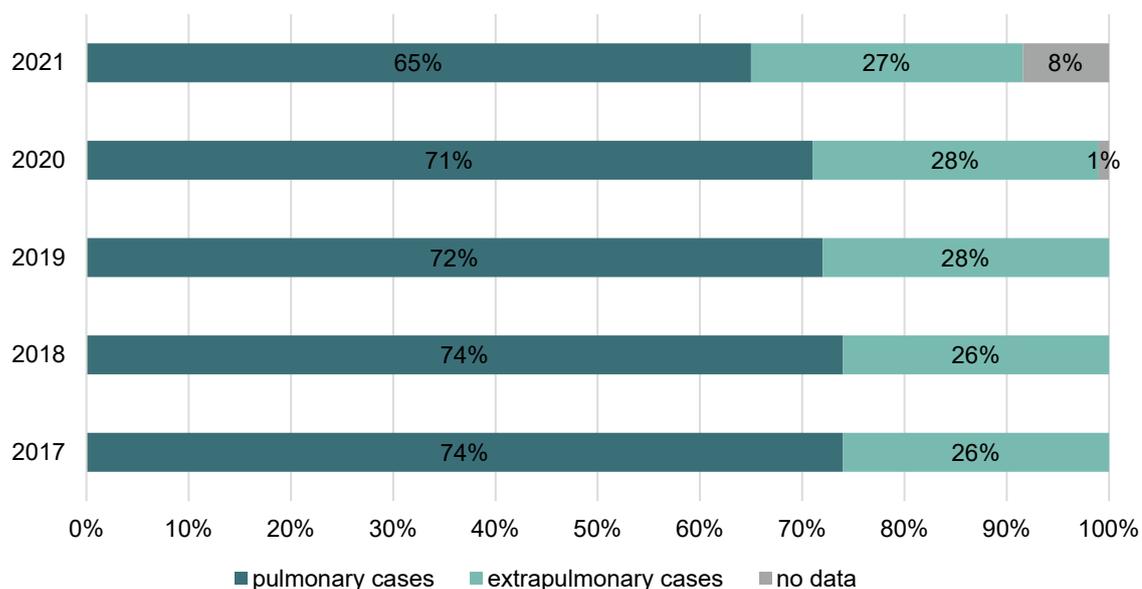
Cantons that appear with the value 0 in Fig. 11 have either not booked any working hours on the cost unit of the CI (GL, SO, SH) or have not tested any people in 2021 (NE, UR).

4 National statistics for tuberculosis cases and evaluation of contact investigations

As already mentioned in Chapter 1, contact investigations (CI) are conducted in accordance with the specifications of the TB Manual in the event of contagious tuberculosis cases in Switzerland. A CI in Switzerland is defined as the testing of at least one contact person of an IP and recording his data in the PDMS. However, the CI as such includes all services that a TB service provides for a specific TB case (administrative tasks, testing, advising contact persons and index cases, other services).

Comments on Chart 2

- If the number of TB cases reported to the cantonal TB service is higher than the cases reported to the FOPH (e.g. GE, VS), this may have administrative reasons. Depending on the date of receipt of the report, the cases are noted in the past year or in the new year.
- If the number of TB cases reported to the cantonal TB service is lower than the cases reported to the FOPH, this may have something to do with the reporting practice in the canton in question. Depending on the agreement, not all TB cases are reported to the TB service.
- The number of CI carried out depends on how many of the TB cases have been classified as contagious, and when the competent cantonal medical office orders a contact investigation.

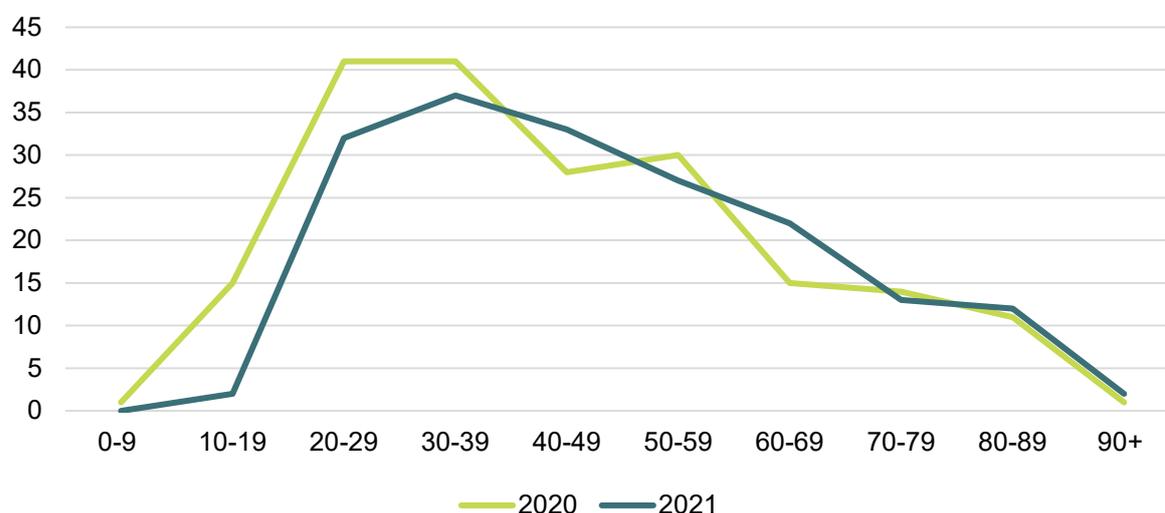
4.2 Localisation of tuberculosis disease**Fig. 13: Ratio of pulmonary to extra-pulmonary cases (n=297)**

All cases of pulmonary tuberculosis that are registered as pulmonary or pulmonary + extrapulmonary are considered pulmonary cases. This stands in contrast to purely extrapulmonary cases, in which the lungs are not affected.

Pulmonary TB cases usually trigger a CI because only these are classified as potentially contagious. In 2021, 65% of TB cases reported to TB services were reported as pulmonary (or pulmonary and extrapulmonary), while 27% were reported as purely extrapulmonary. In 8% of the cases, the system did not assign either of these two categories.

4.3 Age distribution of index cases with a contact investigation

Fig. 14: Age distribution of index cases with CI



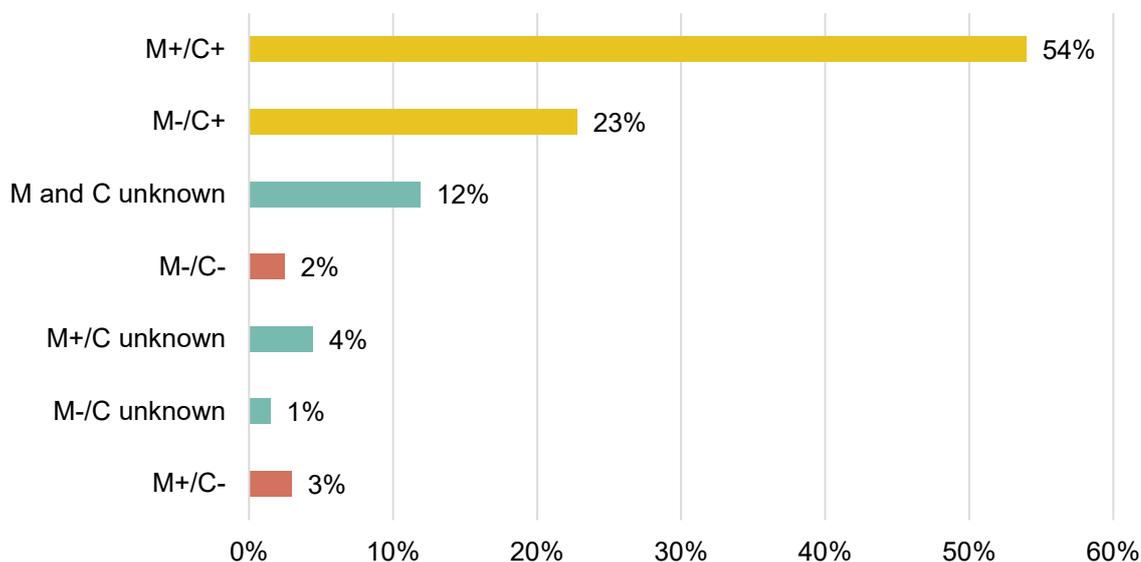
As in the previous year, the age distribution of cases that triggered a CI shows a majority of young adults between 20 and 50 years of age (Fig. 14). An important reason for this clustering, which is also observed in other western countries, is that this age group is over-represented with migrants from countries with an elevated TB prevalence. The proportion of tuberculosis cases in older people is correspondingly smaller.

It can happen in any adult age group that cases are discovered late and are contagious to contacts for a longer period of time. Children under the age of 10 rarely have a contagious form of tuberculosis. If children under 10 years of age are index cases for a contact investigation or are suffering from tuberculosis, a (generally adult) source of scatter among the contact persons is usually sought (centripetal contact investigation). This was never the case in 2021; the youngest index patient was 17 years old, born in 2004.

4.4 Bacteriological status of pulmonary index cases

The TB services recorded a total of 202 cases of pulmonary tuberculosis in 2021. The bacteriology results of these cases break down as follows:

Fig. 15: Bacteriological status of pulmonary TB cases in 2021 (n=202)



Legend

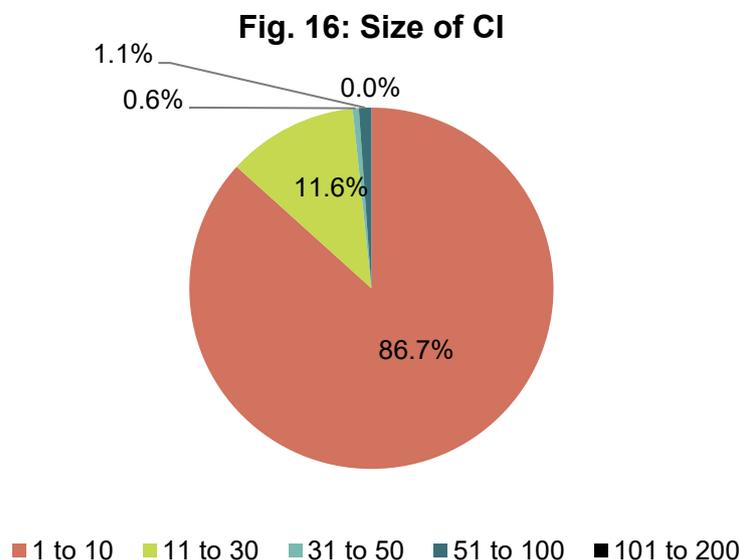
M+ and M-: Microscopy positive or negative from a respiratory sample
 C+ and C-: Culture positive or culture negative from respiratory or other material
 Yellow: Culture-positive cases
 Red: Culture-negative cases
 Turquoise: Cases with unknown culture outcome

77% (2020: 72%) of pulmonary cases were confirmed in culture (155 cases). 17% (2020: 19.8%) had an unknown culture result. 12% (2020: 14.6%) had both an unknown microscopy and an unknown culture result. 2% (2020: 6.1%) have both microscopy and culture negative (five cases). Some of these are cases in which a CI was initiated but suspended after the negative culture result was available.

Overall, these numbers have improved compared to the previous year. This indicates that correct diagnostics were carried out by the attending physicians, as well as good follow-up and documentation of the laboratory results by the cantonal TB services.

4.5 Scope of the contact investigations

In 2021, 181 contact investigations were reported by the TB services in Switzerland. These differ in their scope, i.e., depending on the number of contact persons (CP) they include. The distribution per size category in 2021 is very similar to previous years and is shown in Fig. 16.



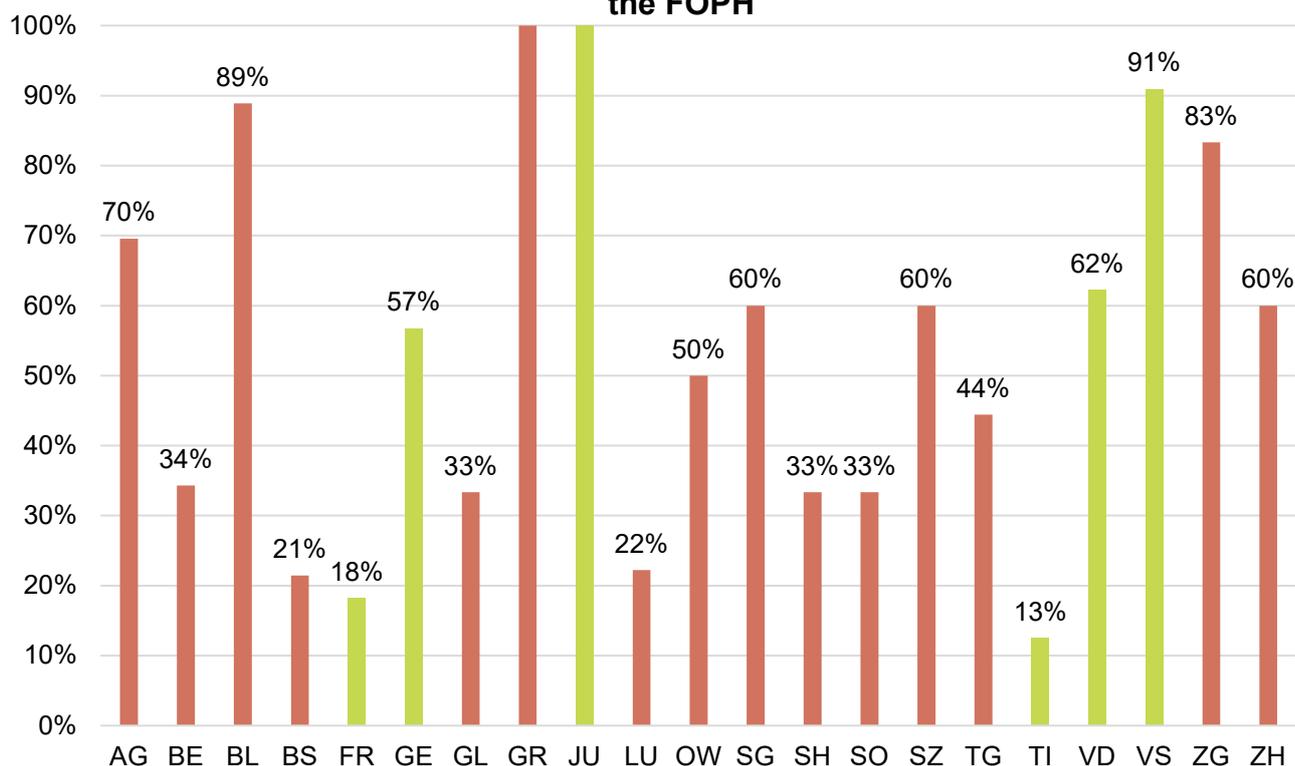
Contact persons who were tested for an IP abroad and contact persons who were tested outside the canton are not included in the evaluation. In addition, the information on the CI also includes contact persons who were registered in the system but ultimately did not receive a test. However, this only marginally influences the percentage breakdown of CI into size categories.

Very large CI (greater than 100 people) were not registered in 2021, as in the previous year. The vast majority (86.7%) of all CI comprise one to 10 people. This is due to the fact that the exposure time for tuberculosis transmission is relatively long compared to, for example, the transmission of SARS-CoV-2, and accordingly fewer people in the area qualify for investigation. The majority of people at risk live in the same household as the IP or have had cumulative exposures in the same room for more than eight hours in the three months prior to treatment initiation. As a rule, not many people in the environment of an IP meet these criteria (cf. TB Manual, page 24).

4.6 Contact investigations in a cantonal comparison

The numbers for the CI vary depending on the canton and also from year to year. One explanation for the variations between the cantons is the different ways in which the CI is conducted (in particular the indication for the CI and its scope). In the case of small numbers, however, random fluctuations are also to be expected. In principle, a CI is ordered for IP with the bacteriological results M+, M-/C+ and for all cases of tuberculosis in children under the age of five (centripetal CI). In complex individual cases, the final decision rests with the cantonal doctor, but it can also be made jointly with the cantonal TB service and the attending physician.

Fig. 17: Tuberculosis cases with CI as % of all cases reported to the FOPH



The number of CI compared to the total number of cases reported to the FOPH can provide information on how restrictive the indication for a CI is. In Fig. 17, cantons in German-speaking Switzerland are marked in red and cantons in non-German-speaking Switzerland are marked in light green. The data shows no trend for the two language regions. The more pulmonary cases are reported in a canton, the more CI can be expected. The numbers vary greatly between cantons.

If only the cantons with at least 10 tuberculosis cases are compared, the percentage also varies greatly. In 2021, this ranges from 13% (2/16) in the canton of Ticino to 91% (10/11) in the canton of Vaud. These figures are not absolutes, because TB cases may be counted by TB services in 2021 that may already have been calculated by the FOPH in 2020, or will be calculated in 2022.

If one compares the four cantons with more than 30 tuberculosis cases (BE, GE, VD, ZH), the ratio varies from 34% (BE) to 62% (VD).

It should also be noted at this point that tuberculosis cases discovered in asylum seekers in the weeks after the asylum application often do not give rise to a CI, or rather to a more restrictive one (often limited to family, fellow travellers or particularly exposed roommates if need be). Identifying and investigation contacts is also often difficult. The practice varies depending on the location of the asylum centre. The COVID-19 situation has also influenced global migration, which was lower in 2020 and 2021 than in previous years (according to SEM statistics).

Fig. 18: Contacts tested per TB service (n=1063)

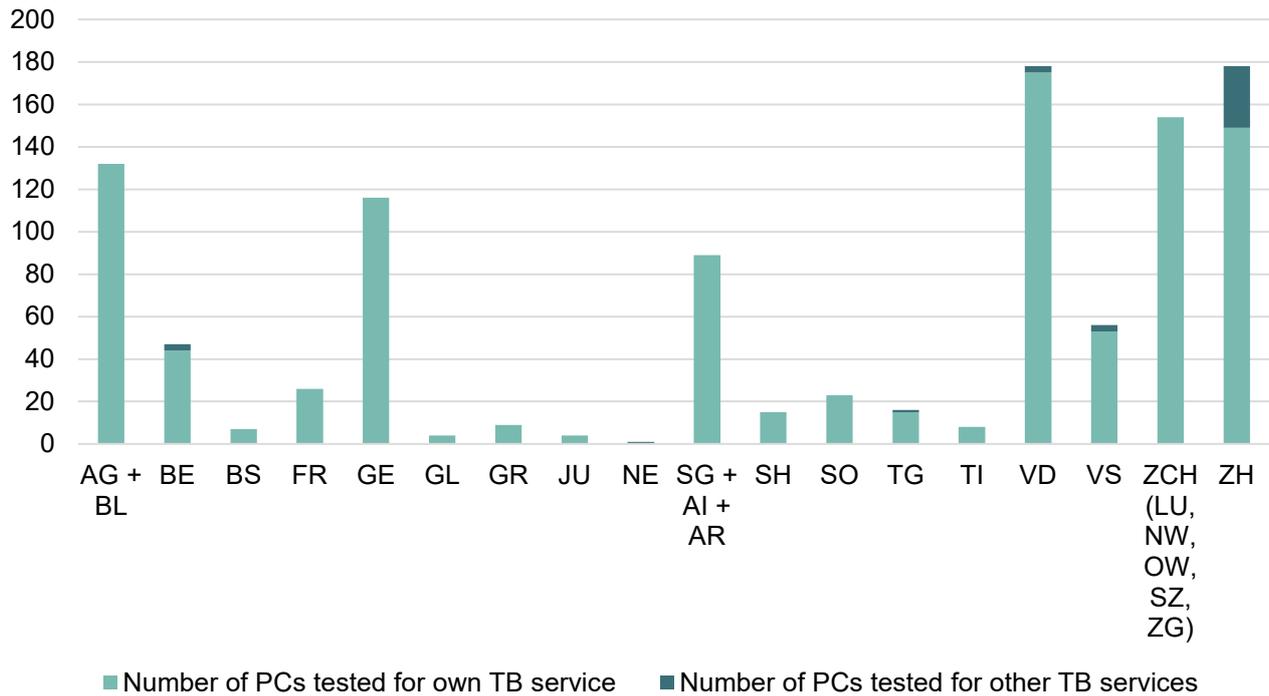


Fig. 18 provides information on how many contact persons a cantonal TB service tested for its own CI (turquoise) and how many people it tested for other cantonal TB services (blue). The canton of Uri is not shown this year due to its lack of testing activity.

In total, 1063 (2020: 1353, -21%) people were tested in the context of a contact investigation, 40 (4%) of them extra-cantonal and 1023 for their own TB service. Whether and for how many contact persons a service carries out tests for another canton depends heavily on which CI take place in the respective year, how many people they include and whether the index patient was mobile and had contacts in different cantons. In 2021, only the TB services of BE, NE, TG, VD, VS and ZH tested for other cantons. In principle, it can be stated here that the inter-cantonal cooperation works well and that the correct implementation according to the TB Manual is guaranteed for supra-cantonal CI.

Fig. 19: Average number of contacts per CI tested

Fig. 19 shows the average number of contact persons tested (only for their own TB service) per CI. On average, six contact persons were tested per CI. This is consistent with the statement that in 2021, the majority of all CI included 1–10 contact persons. This number has fallen slightly compared to previous years. This could be a consequence of the general contact restrictions caused by the pandemic. The information provided by the canton of Schaffhausen is not to be regarded as representative, since it only concerns one CI with a total of 15 contact persons.

This key figure can give an indication of whether the indication for testing exposed persons is handled more or less restrictively. With an increasing number of people tested, a less exposed group of people is recorded on average, which tends to make the use of resources less worthwhile. However, the key figure also depends to a large extent on how mobile the index patient was and how many people were in their immediate vicinity.

Differences between cantons in the number of people tested can also depend on specific circumstances in individual years (e.g. a CI in a school or other special institutions can give rise to a larger number of tests than a CI in private circles). It also happens that a test is conducted for psychological reasons to calm contact persons without there being a medical indication.

4.7 Results of the people tested in the context of contact investigations

According to the specifications of the TB Manual (Chapter 4.4., Choice of test type), there are different testing strategies for contact persons in a contact investigation. Depending on the situation, either only a TST is chosen (primarily for contact persons under the age of 5), a TST with an IGRA as a follow-up test (if a false positive TST is suspected) or only an IGRA (majority of adult immunocompetent persons).

Fig. 20: Categories of contact persons tested

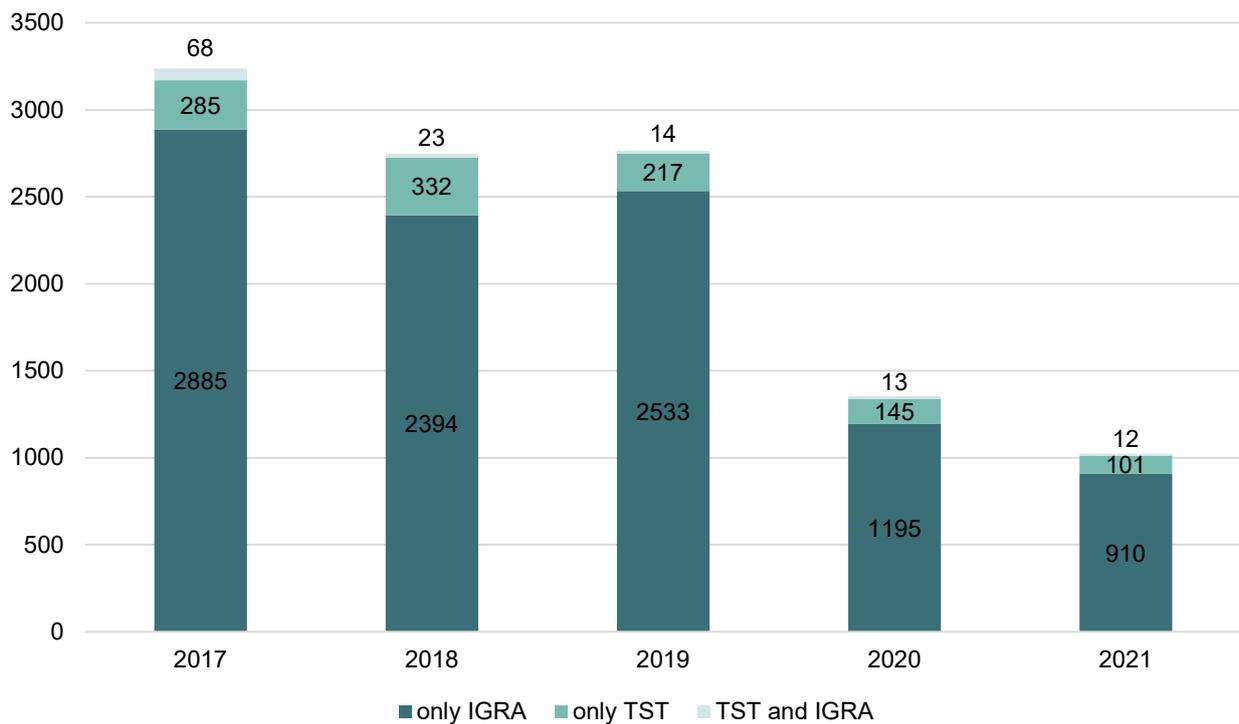


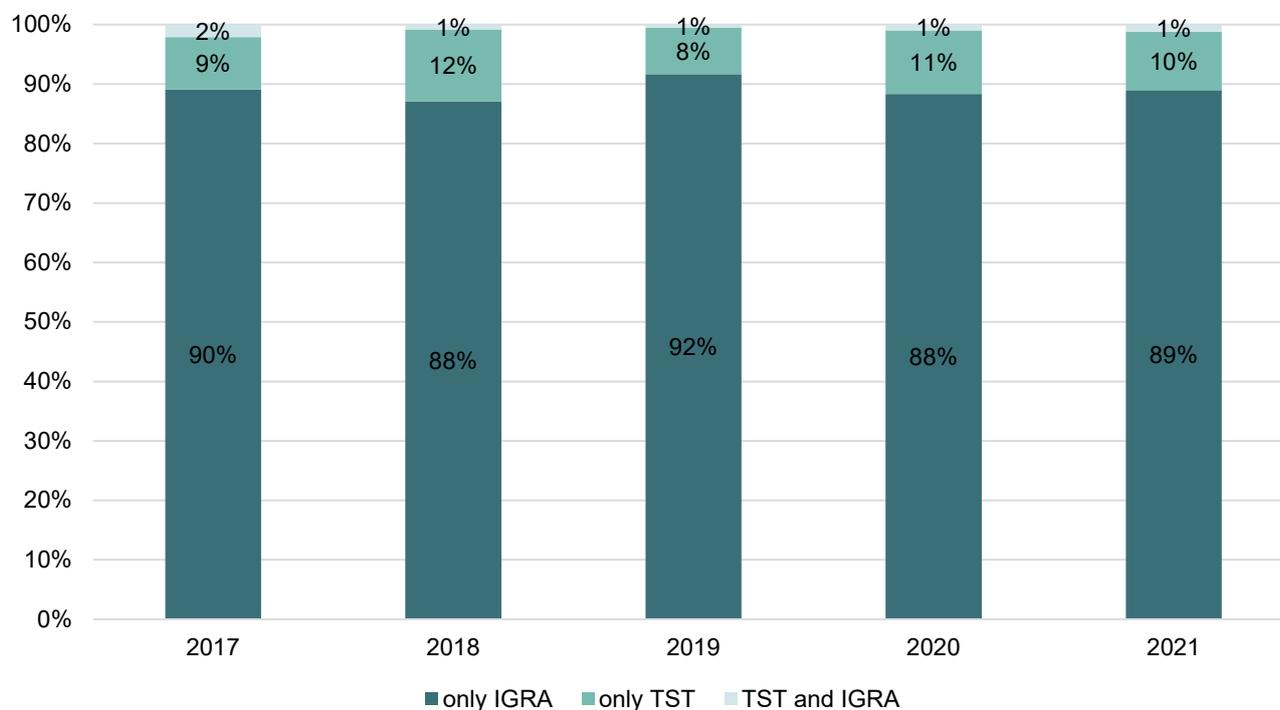
Fig. 21: Categories as % of contacts tested (n=1023)

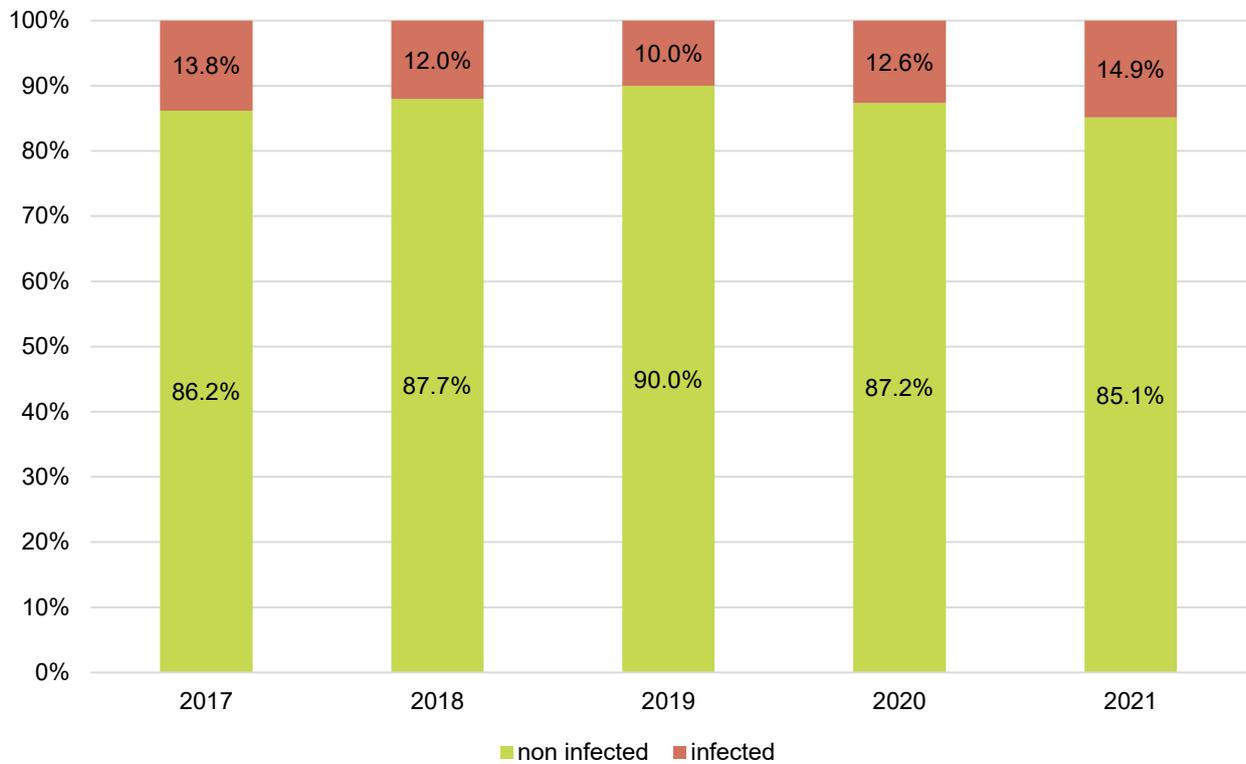
Fig. 20 shows the three test groups per year in absolute numbers, and Fig. 21 shows them as a percentage. The number of distributions in the three test groups has remained relatively constant since 2017.

People who have a positive test result but no signs of active tuberculosis are referred to as 'infected'. The tests only indicate previous contact with mycobacteria. In the tuberculin skin test, these are not only mycobacteria of the *M.tuberculosis* complex, but also atypical mycobacteria. The tests also give no indication of the date of infection. The positive test result can also be based on contact that took place years earlier.

In 2021, a total of 152 contact persons (14.9%) were classified as infected based on their positive test results. Contact persons with the following test results are considered infected:

- TST+ confirmed by an IGRA+
- Only TST+
- IGRA+

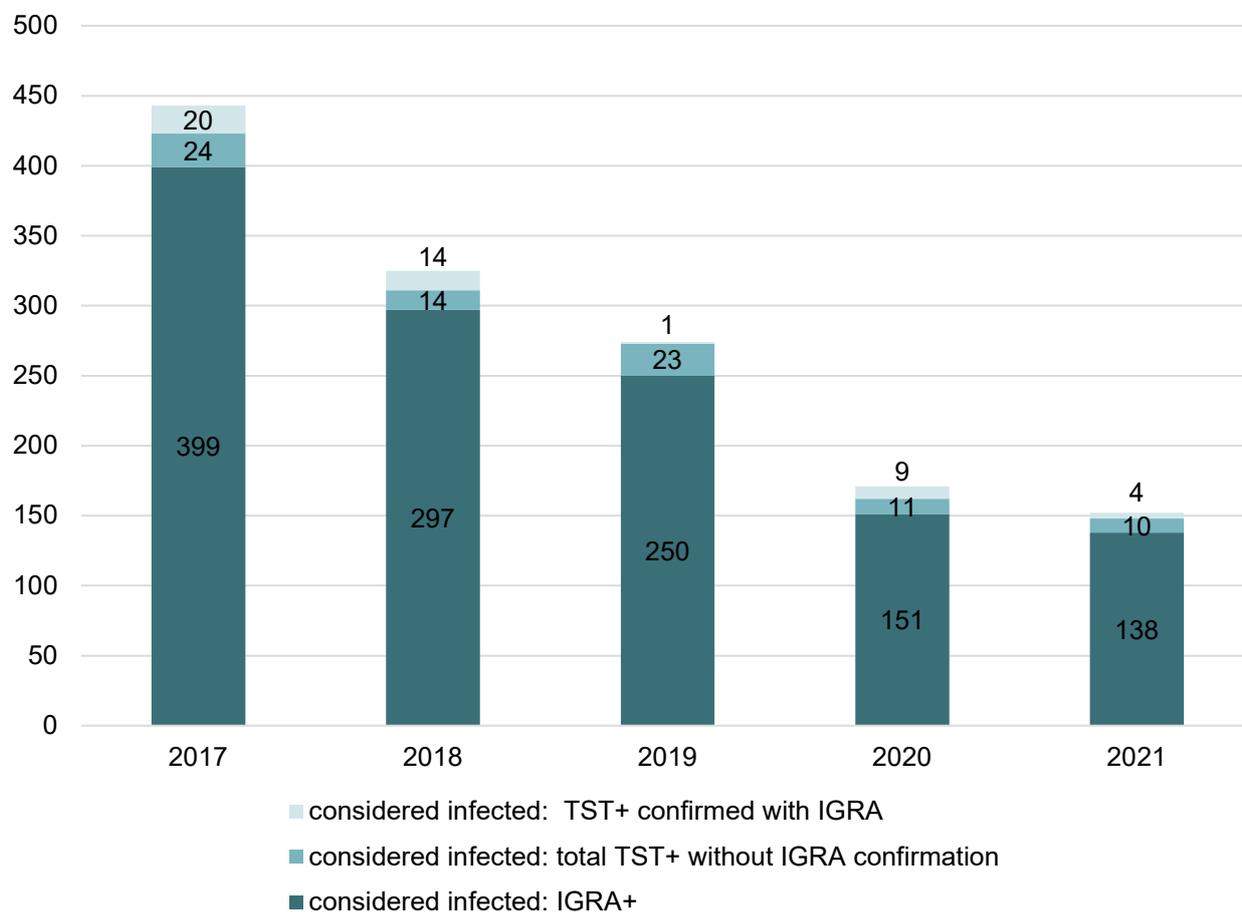
Fig. 22: Infected and uninfected PCs as % of all PCs tested



The positivity rate increased slightly in 2021 (+2.3%) compared to the previous year. It is also the highest since 2017. On the one hand, this key figure depends on how restrictively the CI is implemented and on the other hand on how many contact persons agreed to a test.

The infected contact persons are divided into the three test strategies as follows:

Fig. 23: Infected contacts by type of test



The ratios between the different test groups do not vary greatly compared to the previous year. Due to the constantly increasing number of people who are only tested with an IGRA, the infected contact persons in this group are also increasing in absolute numbers. In percentage terms, this number also increased slightly compared to the previous year (2021: 138 = 15%, 2020: 151 = 12.6%). Due to the current availability of tuberculin on the Swiss market (it has to be imported from abroad), IGRA tests will probably continue to increase in the future. This is to be considered sensible, except for the groups mentioned in the TB Manual where TST testing appears to be a better option for medical reasons.

4.8 Treatments of infected contact persons and number of contact persons with tuberculosis

The primary goal of the search for infected people is the subsequent treatment of tuberculosis infections (TBI) in people with an increased risk of subsequent tuberculosis reactivation.

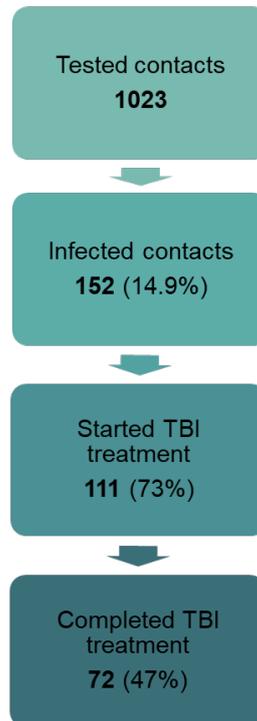
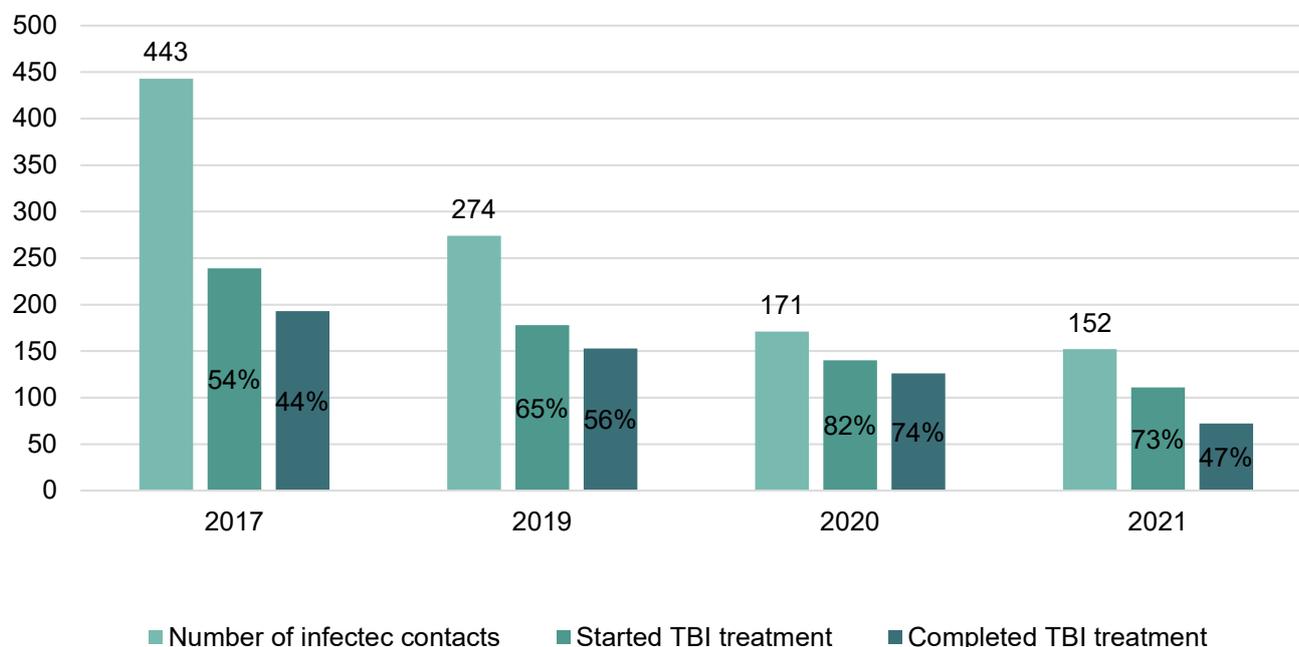


Chart 3: Absolute numbers and percentages of infected CPs, those who had started TBI therapy and those who had successfully completed this therapy in 2021.

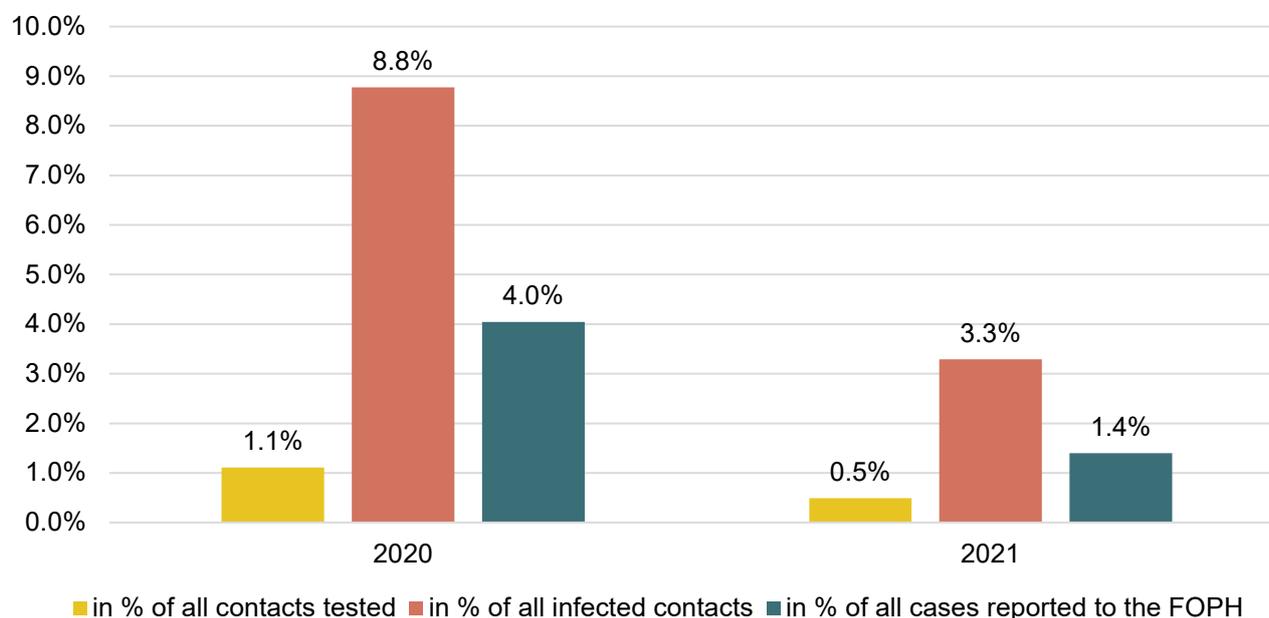
Of 152 infected contact persons (CP), 111 started TBI treatment and 72 completed it successfully (Chart 3). That results in a completion rate of 47%. It is possible that contact persons have completed the treatment, but this information was not yet recorded in the system at the time of the data analysis. In practice, the effective completion rate may therefore be slightly higher than stated here.

Fig. 24: Development of TBI treatments for infected contacts

Note on Fig. 24: The year 2018 could not be evaluated due to technical problems.

TBI treatments started: Ultimately, not all people considered 'infected' had an indication for TBI treatment (already treated tuberculosis/TBI, advanced age, medical contraindications). In principle, however, it can be assumed that the intention to test also includes the intention to treat. However, there are also people who do not take a proposed treatment. Therefore, the number of TBI treatments started is lower than the number of people with TBI (infected contact persons).

Completed TBI treatments: The percentage of completed TBI treatments relative to the number of treatments started was stable between 2016 and 2021, with a percentage rate of between 78.4% and 86.0%. Compared to the previous years 2019 and 2020, the rate of completed TBI treatments fell sharply again in 2021. However, it is still higher than the 44% in 2017. The decrease could be related to the fact that not all TB services had all the information on the final outcome of the therapy, or that many contact persons did not want to/were unable to end the therapy. More precise analyses would have to be carried out with the data of the corresponding contact persons if the trend should continue to strengthen in the coming year.

Fig. 25: Incidence of tuberculosis in tested contacts

Since 2020, contact persons with TB who were discovered in the course of a CI are also statistically recorded. In 2020 there were 15 such TB cases, while in 2021 there were only five. Based on all TB cases reported to the FOPH, these amount to up to 4% in the last two years. More data is needed in the coming years to establish a trend. TB diseases discovered in contact persons are reported to the FOPH as separate TB cases and can also trigger a CI if there is a risk of infection.

5 Directly-observed therapy (DOT) results

The most important measure in containing tuberculosis is ensuring treatment (breaking the chain of infection and preventing the development of resistance). An assessment of the probable adherence of each individual patient is the first thing to be considered for any treatment, especially in the case of pulmonary tuberculosis. Some of the treatments are carried out under the supervision of the intake of each dose of medication (directly-observed therapy, DOT).

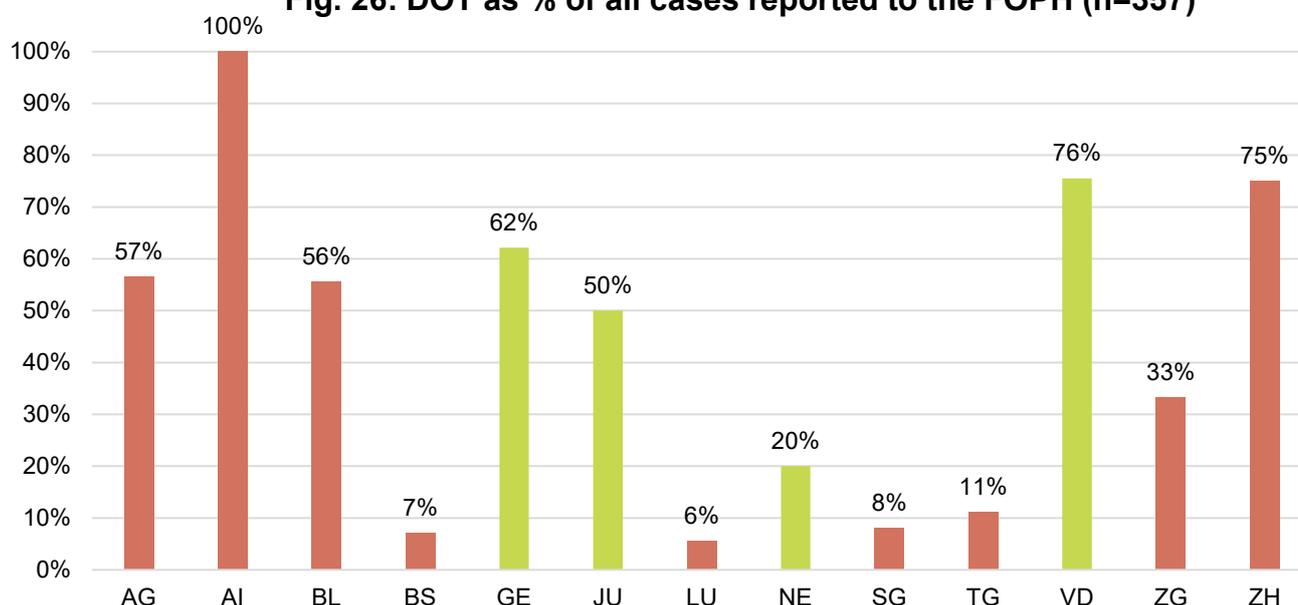
Fig. 26: DOT as % of all cases reported to the FOPH (n=357)

Fig. 26 shows the DOT that a TB service either conducted itself or was responsible for administratively. The cantons AR, BE, FR, GL, GR, NW, OW, SH, SO, SZ, TI, UR and VS did not record any DOTs for 2021, and are therefore not included in Fig. 23. Since not all TB services receive all tuberculosis cases from their cantonal medical service (cf. Chapter 2, Fig. 2), it is possible that further DOT will be prescribed by treating specialists, of which the cantonal TB services did not have any knowledge. This is particularly true for tuberculosis cases that have not triggered a CI.

The average number of DOT/reported cases is 23% throughout Switzerland in 2021. This is a reduction of 18% compared to the previous year (2020: 41%). A comparison with the data from the last few years shows that the cantons still show great heterogeneity in terms of the frequency with which DOT is used.

DOT were already conducted more frequently in non-German-speaking Switzerland than in German-speaking Switzerland last year (2020). In 2021, this trend will continue: in non-German-speaking Switzerland there was a DOT in an average of 30% of all cases, while in German-speaking Switzerland the figure was 21% of all reported cases.

In most cantons, the attending physician decides whether to carry out a DOT alone or in consultation with the TB service and the cantonal doctors (cf. Chapter 3, Fig. 5). Most of the DOT are delegated to other bodies by the cantonal TB services. In these cases, the daily administration of medication is carried out by third parties (e.g. pharmacies or socio-medical institutions). The cantonal TB service is responsible for the overall supervision, administrative responsibility and collation of the treatment outcomes. It usually has an order for the organisation of DOT from the respective canton (cf. Chapter 3, Fig. 1).

6 Concluding remarks

In 2021, the cantonal TB services, in cooperation with the cantonal medical offices, the employees of the federal asylum centres, the attending physicians and other health professionals involved in Switzerland, succeeded in conducting the required 181 contact investigations correctly and efficiently in accordance with the evidence-based guidelines. The care of the index patients, their families and contact persons, who had to be informed and tested in the context of a CI, requires a high degree of professional competence and empathy. The employees of the cantonal TB services fully meet these requirements and are a reliable partner for all stakeholders.

The correct execution of the contact investigations and the correct treatment of the index patients make a significant contribution to protecting public health in Switzerland and preventing tuberculosis from spreading. For the coming years, all stakeholders will continue to strive to streamline processes and ensure appropriate care and treatment for everyone living with tuberculosis. Not least because of current challenges such as the war in Ukraine, it remains of central importance to think of tuberculosis as a differential diagnosis. The Tuberculosis Competence Centre of the Swiss Lung Association supports all specialists in their daily work to combat tuberculosis.

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