

TRENDS

Bronchoscopy in the Czech Republic in the past 45 years and the state in 2020

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ABSTRACT

BACKGROUND AND METHOD: To determine the current situation and trends in bronchology in the Czech Republic (CR), a questionnaire survey has been conducted by the Czech Pneumological and Phthisiological Society (CPFS).

RESULTS: In 2020, 158 bronchoscopists conducted 26,700 BRS procedures, 927 of them were rigid. 2,869 procedures were done under general anaesthesia. Of diagnostic methods, the use of endobronchial ultrasound (EBUS) is rising, being available in 35 % BRS facilities in 2020. Interventional bronchology procedures are conducted in 17 facilities and 1,517 were executed in 2020. The numbers of cryocauterizations and stenting are growing. In the questionnaire we asked also about biomarkers of lung carcinoma that are examined at 47 out of 49 facilities. Since 1975 when 11,194 bronchoscopies were conducted in the CR, their numbers increased to 33,282 in 2009, then dropping slightly to 26,700 in 2020. At present, 254 bronchoscopies are conducted per 100,000 inhabitants in a year.

CONCLUSIONS: Based on the BRS survey in 2020 it can be concluded that Czech bronchology is developing in the right direction and is well equipped with both, staff and technical devices. We are adopting new methods without delays and we expand the use of those working well (EBUS) (Tab. 4, Ref. 13). Text in PDF www.elis.sk

KEY WORDS: bronchoscopy, endobronchial ultrasound, national survey.

Introduction

Bronchology (BRS) section of the CPFS made decision to conduct another survey of the bronchology state in the Czech Republic with the intention to follow up on the previous surveys and thus obtain an overall view of how this pneumological specialisation developed in the country in the past 45 years. We are aware that both the numbers and the types of procedures may have been affected by ongoing COVID-19, yet the survey may ascertain the impact of the pandemic on Czech bronchology. The objective of the survey was to determine the number of bronchoscopies in 2020 and the number of bronchoscopy facilities in which these procedures were conducted (in hospitals, pulmonary sanatoria and outpatient facilities) in centres for adults and for children.

Methods

We have used our experience from previous years and prepared BRS questionnaire that was sent (January 2021) to all members of the Czech Pneumological and Phthisiological Society (CPFS) with request to be completed by physicians who conduct bronchoscopy. The questionnaire contained 104 questions about the numbers of bronchologists, duration of their work experience and completed bronchoscopy education. Further, we asked whether only flexible or also rigid bronchoscopies are conducted in their BRS facility, about the numbers and types of procedures by anaesthesia, medication used for local anaesthesia and analgosedation, about the types and numbers of diagnostic methods, and questions about EBUS and radial EBUS were also included. The next part of the questionnaire enquired whether a BRS facility conducts interventional bronchoscopy procedures, their types and numbers and whether X-Ray is used during bronchoscopy. Then we asked about the equipment of a facility with a rigid bronchoscope, fibroscope or a videobronchoscope, Nd YAG laser, electrocautery, cryocautery, and stent instrumentary. In the next part of the questionnaire (27 questions) we were determining whether a BRS facility examines biomarkers of lung carcinoma, how many patients are diagnosed yearly with lung cancer at a BRS facility, whether and, if so, where these patients are treated. In cases where more bronchoscopists were from the same facility we requested only one to respond on behalf of all. Additionally, we approached all paediatric facilities

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Tab. 1. Number of bronchoscopy procedures at BRS facilities for adults.

	Number of procedures	%
Fibroscopy	21,783	82
Rigid bronchoscopy	927	4
Outsourced	3,990	14
Total	26,700	100

(9) where bronchoscopies are conducted. Then we summarised responses, completed and amended them for follow-up personal interviews. BRS facilities that initially did not reply were contacted repetitively via emails and phone calls. As a result, we managed to obtain response from 49 out of 50 facilities in the Czech Republic (CR) that are known to us as conducting bronchoscopy. Adult facilities have been processed for total and some data was divided into 4 sub-groups by facility type, namely 16 Regional and University facilities, 21 District hospitals, 8 Outpatient facilities with BRS and 4 Pulmonary sanatoria.

Results

In 2020, 158 physicians conducted bronchoscopy at 49 BRS facilities for adults and 16 physicians at 9 paediatric BRS facilities. Overall, 174 physicians conducted bronchoscopy in the above facilities.

Of these physicians (at both adult and children's facilities), 71 (40 %) claim having the bronchoscopy course for beginners provided by IPVZ (Institute for further education of healthcare professionals), 45 (26 %) claim having an advanced bronchoscopy course by IPVZ. 36 (21 %) bronchoscopists in the CR have the 018 Rigid and interventional bronchology Licence by the Czech

Medical Chamber.

On average, leading "adult" bronchologists have been conducting bronchoscopy for 23 years, paediatrician bronchologists have had 16 years of experience.

Specific facilities are recorded with the following average numbers of bronchologists. 4.8 in Regional and University facilities, 2.8 in District hospitals, 1.5 in Outpatient facilities and 2.3 bronchologists is the average in Pulmonary sanatoria.

14 (29 %) facilities for adults use both flexible and rigid instrumentary, 35 facilities use flexible instrumentary only. 4 Regional and University facilities use flexible instrumentary only. Of paediatric facilities, only 1 uses both flexible and rigid instrumentary, 8 facilities use flexible instrumentary only.

Next results concern BRS facilities for adults, paediatric facilities will be summarised at the end of this part of the report.

Bronchology facilities are equipped with 333 fibrosopes, of them 160 are videobronchoscopes. Rigid instrumentary is available at 17 facilities, however used at 14 facilities only in 2020.

In 2020, 26,700 procedures were conducted in total, of them 21,783 were fibrosopies, 927 (3.4%) were rigid bronchoscopies and 3,990 procedures were conducted in other departments of the hospitals (outsourced) at the request of their staff, it was mostly a toilet of a bronchial tree in the ICU or help in thoracoscopic operating rooms (Tab. 1).

The majority of bronchoscopies were conducted under local anesthesia (tetracain, mesocain, lidocain), with analgesedation always administered at 12 facilities, most typically midazolam.

2,869 procedures (11 % of all) were conducted at 28 facilities out of 49 under general anesthesia.

The numbers of procedures varied at various types of facilities. It is noted with satisfaction that 25 facilities out of 49 cover more than 300 bronchoscopies conducted in a year.

The number of procedures viewed by specific types of bronchoscopy facilities shows that 8 outpatient facilities conducted 950 procedures in 2020, that is 118 procedures on average. 3 outpatient facilities conducted under 100 procedures and 5 facilities exceeded 100 procedures.

16 Regional and University facilities conducted 18,358 procedures in total. 2,716 procedures per facility is the record number, while 203 procedures are the lowest number. The average number of procedures conducted in these facilities is 1,144. 15 Regional and University facilities managed over 500 procedures.

7,081 procedures were carried out in 21 District hospitals, that is 331 procedures on average. One only conducted under 100 procedures. 100 to 200 procedures were done in 6 and over 200 procedures were achieved in 14.

4 Pulmonary sanatoria conducted 311 procedures, 77 on average. 2 were able to carry out over 50 procedures (Tab. 2).

Tab. 2. Types of BRS facilities and conducted BRS procedures.

Type of facility	n	Number of procedures	Average per facility	Quantitative division
Outpatient	8	950	118	5x ≥ 100 BRS
Regional & University	16	18,358	1,144	15x ≥ 500 BRS
District hospitals	21	7,081	331	14x ≥ 200 BRS
Pulmonary sanatoria	4	311	77	2x ≥ 50 BRS
Total	49	26,700		

Tab. 3. Number of interventional procedures conducted at BRS facilities in 2020.

	Number of procedures	Number of facilities
Laser	112	6
core out	205	8
Electrocautery	147	9
Cryocautery	653	10
Stent	203	6
Brachytherapy	26	7
bronchial thermoplasty	15	1
introduction of valves (bronchial volume reduction)	46	3
Other interventions (ball dilatation, foreign bodies, pleuroscopy (4x), treatment of post-surgery bleeding, spigots, blockers, assisted tracheostomy...)	110	9

Tab. 4. Development of numbers and types of bronchoscopy procedures and equipment of BRS facilities for adults from 1975 to 2020 in the Czech Republic.

Monitored information	1975 (1)	1994(2)	1999 (4)	2009(5)	2012(3)	2020
BRS facility for adults	58	66	67	59	56	49
Facility by the number of BRS in a year	≥ 400 7x	?	?	≥300 28x	≥ 300 35x	≥ 300 25x
Number of bronchologists	?	140	152	182	169	158
Number of adult bronchoscopies	11,194	26,732	26,971	33,282	30,354	26,700
of them flexible bronchoscopies	?	22,280	24,166	31,645	28,587	25,773
of them rigid bronchoscopies	?	4,452	2,805	1,637	1,767	927
BRS in general anaesthesia	?	?	?	2,194	2,146	2,869
Number of fibrosopes	13	112	144	182	231	333
Of them videobronchoscopes	0	8	20	81	88	160
Number of rigid instrumentary	65	68	82	87	79	17
Number of interventions	0	?	847	1,683	665	1,517
Number of facilities with BRS interventional procedure	0	7	?	?	17	17
Number of procedures:						
Laser	0	7	442	1,235	217	112
Stent insertion	0	4	45	121	120	203
Brachytherapy	0	7	328	78	80	26
Electrocautery	0	0	13	246	133	147
Cryocautery	0	0	19	3	57	653
Insertion of valves	0	0	0	1	47	46
Bronchial thermoplasty	0	0	0	0	11	15
Electromagnetic navigation	0	0	0	46	42	3
Autofluorescence BRS	0	0	26	1,724	1,356	0
EBUS Number of procedures	0	0	0	544	1,240	2,351

Samples sent to cytology or histology are evaluated at 35 facilities by a “pathologist” only. A pathologist and a pneumocytologist do this at 11 facilities and pneumocytologist only at 3 facilities. Overall, a pneumocytologist is available at 14 facilities out of 49. The cytology method ROSE (Rapid On Site Evaluation) is available at 10 bronchoscopy facilities.

Bronchoalveolar lavage (BAL) is conducted at 42 facilities (n = 4,437 in 2020), 32 facilities execute the cytoblock method (n = 6873), 33 facilities conduct transbronchial biopsy (n = 2,283), 12 facilities conduct cryobiopsy (n = 974) and 10 facilities do “blind” perbronchial node puncture (TBNA) (n = 393).

The method of endobronchial ultrasound (EBUS) is used at 17 adult bronchology facilities in the CR (35 %). In total, 2,351 procedures were conducted (most 952, fewest 9), 143 procedures on average. This method is used in all Regional and University hospitals except for 2 and it is used also in 3 District Hospitals.

The method of radial EBUS is used at 10 facilities (8 Regional or University facilities and 2 District hospitals) that conducted 1,107 procedures in 2020 (110 on average). 152 procedures used the assisted method of “guiding sheath”. The method of esophageal ultrasound (EUS) is used at only one BRS facility in the country.

Autofluorescence examination was not conducted at any facility in 2020.

Electromagnetic navigation was used 3 times at one facility only in 2020.

Examination through X-Ray image checks (C shoulder) is used at 16 facilities and was executed during 1,612 bronchoscopies in 2020.

Interventional (therapeutic) bronchology procedures are carried out at 17 facilities in the CR, that is 35 % of BRS facilities for

adult patients. The research has found out that 4 out of 16 Regional and University facilities do not carry out interventional procedures at all, while 12 facilities do. Interventional methods are used also at 4 District hospitals and in 1 Outpatient facility.

1,517 such procedures were conducted in a year (fewest 4, most 893, median 35, average 87). 30 and fewer procedures were executed at 7 facilities in 2020. For more details on the numbers of specific procedures refer to Table 3.

Bronchial volume reduction (BVR) using varied methods, most often insertion of special valves, are considered a special category of interventional procedures. These procedures are conducted at 3 clinical facilities in the country and the total number of 46 valves Zephyr and Spiration were inserted in the CR in 2020. BTVA (bronchoscopy volume reduction with the use of hot steam) was applied twice. 4 pleuroscopies conducted at one facility have been included to the above too.

When bronchoscopy mapping in 2020, we asked also about the evaluation of the most frequent biomarkers of lung cancer. They are evaluated at 47 out of 49 facilities. The 2 facilities not evaluating biomarkers are outpatient facilities.

Biomarkers (EGFR, ALK, ROS, PDL1) of lung cancer are evaluated at all 47 facilities (except for one where ROS is not evaluated). Squamous types of BCA are evaluated for PD L1 at all facilities except for 1 District hospital and 1 Outpatient facility. The results are available within 5 to 21 days; the average waiting time is two weeks.

Bronchologists claim that their facility diagnosed 5,293 BCA in 2020.

18 BRS facilities are parts of COC (Clinical Oncology Centre), all are linked to a thoracic surgery facility. According to bron-

chologists, treatment is taking place “at their facility” in 14 cases. Others claim referring patients to another facility, most typically an oncology (26x), or a pneumooncology facility (9x).

The next part presents information gained from bronchologists-paediatricians. In 2020, 441 procedures were conducted at 9 paediatric bronchology facilities (on average, 49 procedures per facility). Of them, 375 were fibroscopies, 18 were bronchoscopies with rigid instrumentary and 48 were so called outsourced. 16 bronchoscopists worked in them.

Procedures are conducted under general anesthesia at all paediatric bronchoscopy facilities. 386 (88 %) procedures were conducted in 2020. 3 facilities executed more than 50 procedures, 6 managed fewer than 50 bronchoscopies in 2020.

Paediatric facilities are equipped with 21 optic fibroscopes and 22 videobronchoscopes. Rigid instrumentary is available at 1 facility and also cryocauter can be used at 1 BRS facility for children. Samples taken during bronchoscopy were evaluated by a pneumocytologist at 2 facilities, by a pathologist at 5 facilities and by both a pneumocytologist and a pathologist at 5 facilities.

BAL is the favourite diagnostic procedure used at all facilities. 283 of these procedures were conducted in 2020. Forceps biopsy is the next most frequent procedure (n = 102).

Of interventional procedures, only the removal of foreign bodies is being conducted, 11 such procedures at 2 facilities.

Thanks to similar BRS mappings executed in the CR in 1975, 1994, 1999, 2009, and 2012, we are able to compare the development of the numbers of procedures, their types and equipment of bronchoscopy facilities in the Czech Republic in the last 45 years. For more details refer to Table 4.

Discussion

The above bronchology facilities findings on performance in 2020 are certainly impacted by the Covid pandemic that affected the Czech Republic similarly to other countries. Thanks to comparison with previous years when we conducted this mapping repetitively, it is apparent that no significant decline has been recorded. Compared to 2012 when 30,354 bronchoscopies were carried out in the country, their number conducted in 2020 is down “only” by 3,654. Similarly, the number of bronchologists has changed only little, down by 11 in 2012, currently accounting for 158. The number of fibroscopes has been growing continuously, reaching 333 in 2020, compared to 1975 with only 13 and 1994 with 112 fibroscopes (1, 2).

There are 66,455 inhabitants per bronchologist in the Czech Republic. 254 bronchoscopies were conducted per 100 000 inhabitants in 2020. To put it into perspective, we can provide similar calculations from 1975 when it was 112 bronchoscopies per 100 000 inhabitants (1).

As for equipment of BRS facilities, the trend of using rigid instrumentary clearly declines. 79 were used at BRS facilities in 2012, while in 2020 it was only 17. The numbers of rigid bronchoscopies decline accordingly, 1,767 in 2012 vs 927 in 2020 (3).

Increasing numbers of procedures conducted under general anaesthesia are considered a positive change. Their number in-

creased from 2,146 in 2012 to 2,869 in 2020. General anaesthesia is currently available at 28 BRS facilities for adult patients.

Czech pneumocytologists are less engaged in evaluating the samples taken during bronchoscopies than they were in 2012 (22 in 2012 vs 14 in 2020) (3).

Bronchoalveolar lavage is conducted at 42 BRS facilities for adults (4,437 in 2020 and 2,425 in 1999) (4).

Growing numbers of facilities equipped with EBUS (endobronchial ultrasound bronchoscopy) and growing numbers of EBUS procedures are considered a highly positive trend. 544 (5) procedures were conducted in 2009, 1,240 at 13 facilities (3) in 2012 and 2,351 procedures at 17 facilities in 2020. Furthermore, a new method of so called radial EBUS, (rEBUS) is already being applied at 10 bronchoscopy facilities that conducted 1,107 procedures in 2020.

Examination with auto-fluorescence was conducted in no BRS facility in 2020. 1,356 such procedures were done at BRS facilities 8 years ago (3). It can be presumed that this markedly declining trend reflects the low diagnostic benefit of this procedure in clinical practice.

The numbers of interventional procedures are down by 166 in 2020 vs 2009; 1,517 vs 1683 (5). Significant decline is found in the numbers of procedures with Nd YAG laser and brachytherapy. On the contrary, the number of inserted stents is 203, which is highest on the record. The number of inserted valves (Zephyr, Spiration, n=46) remains low in 2020, similar to 2012 when they accounted for 47.

The latest mapping of Czech bronchology was also ascertaining whether taken samples are evaluated for lung cancer biomarkers (EGFR, ALK, ROS) and PDL1 expressions. It is pleasing to have found out that these markers are evaluated at more than 95 % of bronchology facilities of all types. We asked also about the volume of patients at bronchoscopy facilities diagnosed with lung cancer. Providing the numbers are considered “with reserve”, although the stated 5,293 may not be far from the actual situation, which we will soon learn from NOR (National Oncology Register) data.

The barrier to precisely compare our results of long-term monitoring of activities in bronchology facilities with other countries is the lack of similarly organised studies and also differently set up systems of bronchology “services” in varied countries where the link to pneumology facilities is not as prevalent as in the CR.

The results of a recently published bronchology survey conducted in Germany is interesting in many respects (6). The authors sent a questionnaire with 29 questions to 277 private outpatient facilities that conduct bronchoscopy and to 1,598 “respiratory” and “internal medicine” hospitals. Only 155 (56 %) outpatient facilities and 472 (29.5 %) hospitals responded. It was concluded from the research that on average, 4.2 bronchologists conduct bronchoscopy in hospitals (4.8 in the Czech Republic (CR)) and in outpatient facilities it is 1.6 bronchologists (1.5 in the CR). Finding of interest to us is that almost a half of hospitals (that responded in the questionnaire) conduct bronchoscopy only in admitted patients. Although the authors provided the numbers of bronchoscopies conducted at the responding facilities, the nationwide number for Germany cannot be concluded. However, what

was possible to find out is that on average, respiratory clinics carry out 1,383 BRS in a year, 203 are conducted at internal medicine wards and the shares of bronchoscopies with rigid instrumentary at these two types of hospitals are 8.5 % and 2.1 %. In comparison with a German bronchoscopy survey conducted in 2000 it is apparent that the numbers of rigid bronchoscopies declined from 10.2 % to 7.3 %. The above findings can be compared with Czech results, specifically with the numbers of procedures in Regional and University facilities where on average, 1,144 bronchoscopies were conducted in 2020 and of them 3.4 % used rigid instrumentary. Similar to Germany, also the CR witnessed decline of rigid bronchoscopy from 10.4 % in 1999 (4) to the above mentioned 3.4 %. The 2016 German mapping states that 44 % of institutions conduct over 300 procedures per year. In the CR, 51 % of BRS facilities overcame 300 procedures.

In Germany, interventional procedures are carried out mostly in “respiratory” clinics and 45 % of bronchologists are experienced with interventional procedures with laser, cryo- or electrocautery. Stents are implanted by 31 % of bronchologists and EBUS by 41 %. Although this has not been monitored in the CR survey, it seems that fewer bronchologists in the CR have this experience. The number of facilities (“respiratory clinic”) carrying out interventional procedures is in Germany higher than the number of facilities conducting therapeutic-interventional bronchoscopy in the CR. For example, stents are inserted at 71 % of respiratory facilities in Germany, while in the CR it is only 6 out of 37 hospital facilities, that is 16 %. In Germany, EBUS is available at 79 % of respiratory hospitals, while in the CR it is approx. 50 % (17 out of 37 hospitals in the CR). Significant difference is found also in the number of facilities where bronchologists conduct volume reduction with valves and coils. In Germany it is conducted in 23.5 % of hospitals, while in the CR it is only 3 out of 37 facilities (8 %). The conclusions of German authors are inspiring also to us regarding the future development of bronchology. They request improvement of diagnostics of lung focuses, wider use of EBUS transbronchial needle biopsy and engagement of forceps biopsy (radial EBUS), price reduction of bronchoscopy navigation systems and improvement of analgosedation for bronchoscopy patients.

Another source of literature on a “bronchological survey” published in 2015 deals with the state in Australia and New Zealand in 2013 (7). A questionnaire with 68 questions was sent to 824 physicians, the members of the Thoracic Society of Australia and New Zealand (TSANZ). Of 192 answers, the following extracts can be compared with Czech results. 67 % of bronchoscopies were conducted in hospitals, 11 % in the private sector (outpatient?) and 22 % in both types of facilities. In 2013, responding bronchoscopists conducted 26,844 bronchoscopies. It cannot be concluded how many were executed nationwide in both countries. The authors claim that on average, 100 bronchoscopies are conducted per bronchoscopist, which converted to their Czech counter parts for adult patients results in 169 as the average of yearly conducted bronchoscopies. A half of the patients in Australia and New Zealand are indicated for spirometry prior to bronchoscopy, 16 % of bronchoscopists do not discontinue clopidogrel even in

patients with anticipated bronchial excision. 32 % of responding bronchoscopists conduct EBUS that is in the CR provided at 17 facilities: 14 Regional and University facilities and 3 District hospitals. When the average number of bronchoscopists operating in these facilities in the CR is calculated in, it is concluded that approximately 75 or 50 % of bronchoscopists in adult BRS facilities are experienced with EBUS in the CR. Intravenous sedation prior to bronchoscopy is used by 94 % bronchoscopists, which is more than in the CR where analgosedation is used “always” only by under a third of BRS facilities. In the conclusion, the authors admit significant differences among respondents in this survey in conducting bronchoscopy and also frequent “deviations” from international guidelines.

Further, a similar bronchoscopy mapping conducted in Japan can be looked into. In 2016, the authors (8) sent 532 questionnaires to Japan accredited BRS facilities, of them responded 433, that is 81 %. The size of facilities was defined by the number of beds. Just as a matter of interest, 35 % of bronchoscopies were conducted in hospitals with over 500 beds. The total number of bronchoscopists working there was 2,135, (4.9 per BRS facility), of them 793 were “senior fellows”. 60 % of BRS facilities have an X-Ray device allowing to carry out procedures under X-Ray control, 37 % of bronchoscopies are conducted at X-Ray wards. Almost a half of BRS facilities conduct all diagnostic procedures in admitted patients. Compared to previous mappings, the number of facilities providing bronchoscopy in outpatients has declined. 68 % of BRS facilities (compared to 35 % in the CR) are equipped with EBUS, under the control of which TBNA is conducted by 63 % of them. This was only 19.6 % in the previous Japanese survey in 2010. 51 % of bronchoscopies use rEBUS, in the CR it is approximately 20 %. Bronchoscopy navigation systems of varied types are available at 41.7 % of BRS facilities. The number of facilities equipped with laser dropped in 2016 vs. 2010 from 22 % to 15 %. 80 % of BRS facilities test for HIV prior to each bronchoscopy. 18.7 % of BRS facilities are equipped with and use a rigid bronchoscope, while in the CR it is 29 % of BRS facilities. 77 % of Japanese BRS facilities use midazolam for analgosedation.

An article published in 2020 (9) covers the bronchoscopy state in China. A questionnaire was sent to 356 hospitals in the whole country, 319 (90 %) responded. It is concluded from the survey of procedures that common diagnostics are conducted in all hospitals, EBUS in 34.5 %, which is similar to the CR. Of interventional methods, electrocauterization and inserting of stents are favoured, available at 65 % and 62 % of hospitals, respectively. Laser is used in 24 % and bronchial volume reduction in 17 % of hospitals.

State in Saudi Arabia is the subject of an article published in 2019 (10). In 2016, 456 questionnaires were sent to bronchoscopy facilities in the country, of them 82 responded. What may be of interest to us is the finding that 51 % of respondents obtained bronchoscopy education abroad. In 2016, a half of bronchoscopists conducted fewer than 30 procedures. Interventional procedures are also available in Saudi Arabia, e.g. stent insertion, electrocauterization and others, conducted by approximately 20 % of bronchologists. It is interesting that these procedures are more

often carried out by thoracic surgeons or intensivists rather than pneumologists.

An article by Indian authors (11) who analysed 669 questionnaires completed by bronchologists concludes that on average, 100 bronchoscopies were conducted in 2017, 80 % of them using videobronchoscope, 26.9 % used EBUS, 19.5 % conducted rigid bronchoscopy and 14.2 % radial EBUS. 30 % of respondents conduct interventional procedures (laser cryo- and electrocauterisation), and 18 % are experienced with stent insertion. The latest mapping of 2017 compared to previous years (in 1994 and 1999) reveals that similarly with the CR, the use of videobronchoscopes has increased, while rigid procedures are less frequent (from 32 % in 1994 to 19.5 % in 2017).

An older study by Tom Sutedja (12) from Netherlands states that in 1993, 210 bronchologists conducted 31,000 flexible and 1,500 rigid bronchoscopies. The author claims that the population of Netherlands was 16 million at that time. This brings a picture of bronchology “service” in Netherlands 30 years ago when the number of bronchoscopies was 203 per 100,000 inhabitants.

According to information from (13), in 2000, the average number of bronchoscopies conducted in the USA per 10,000 inhabitants was 8.9. Calculated per 100,000 inhabitants it was 89 procedures.

In 1994, 267 bronchoscopies were conducted per 100,000 inhabitants in the CR (2).

What to conclude in the end? Above all, we are pleased that we can follow up on previous “inventory checks” of Czech bronchoscopy, as we used to refer to this “mapping” in the past. It is possible thanks to our teachers bronchologists, they have contributed to our having solid information on the development of the number and types of bronchoscopy procedures in the Czech Republic. We have the knowledge of when we introduced modern diagnostic methods (EBUS) and interventional procedures (laser, stents, valves) and we know which methods are growing in popularity and which are “withdrawing”.

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