



Declaration conflicts of interest

Boards	Swiss Society for Pulmonology	
Founding member	Swiss Lung Cancer Screening Implementation Working Group (CH-LSIG)	
Grants	Swiss Lung League	PI: Feasibility study lung cancer screening in CH
	Swiss Cancer Research	PI: ICI-associated lung toxicity

Pharmaceutical industry support

Honoraria advisory boards and lectures: AstraZeneca, Boehringer Ingelheim, GSK, Mundipharma, Novartis, OM Pharma, Pfizer, PneumRx and Pulmonx, and Sanofi

Unrestricted research grant: OM Pharma

Recommendation communicated 15.11.22



Home Organisation Methodology Topics Contact Login experts

Search

MEDIENMITTEILUNG

Bern, 15. November 2022

Lungenkrebs-Screening: Das Expertengremium Krebsfrüherkennung publiziert Empfehlungen für die Schweiz

Das nationale Expertengremium Früherkennung hat in den vergangenen Monaten die Vor- und Nachteile eines Lungenkrebs-Screenings für die Schweiz ausführlich evaluiert. **In der heute publizierten Empfehlung schlägt das unabhängige Gremium vor, für Risikogruppen ein Screening mittels niedrigdosierter Computertomographie anzubieten.**

COMMUNIQUÉ DE PRESSE

Berne, le 15 novembre

Dépistage du cancer du poumon : le comité d'experts du dépistage du cancer publie une recommandation pour la Suisse

Le comité national d'experts du dépistage du cancer a analysé en détail ces derniers mois les avantages et les inconvénients d'un dépistage du cancer du poumon en Suisse. **Dans la recommandation publiée ce jour, l'organe indépendant suggère de proposer un dépistage par scanner thoracique à faible dose aux groupes à risque.**



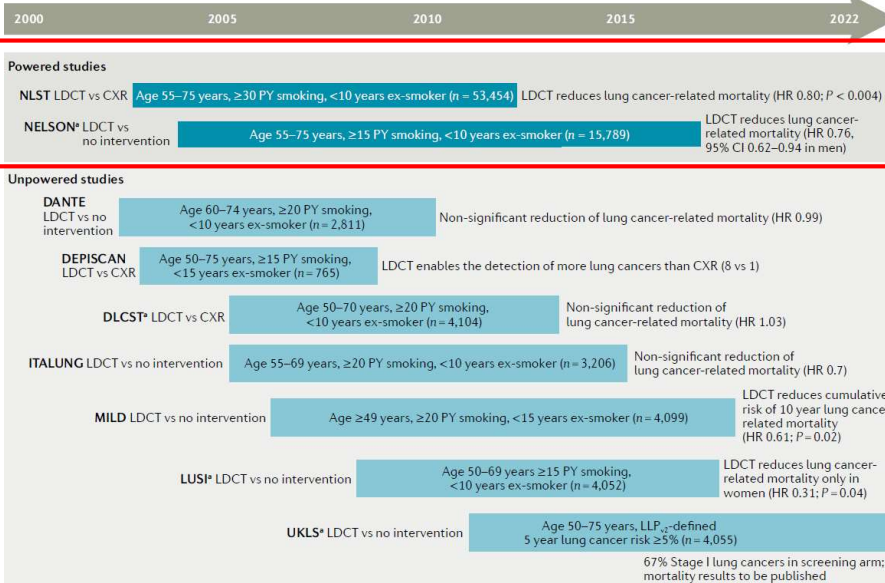
Lung Cancer Screening using LDCT



<https://cancerscreeningcommittee.ch/en/topics/lung-cancer-screening-using-ldct/>



Accummulation of Evidence



Nat Rev Clin Oncol 18, 135–151 (2021) <https://doi.org/10.1038/s41571-020-00432-6>



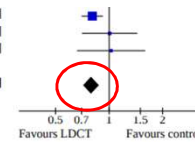
Mortality

Study or Subgroup	LDCT		Control		Weight	Risk Ratio M-H, Random, 95% CI	Risk Ratio M-H, Random, 95% CI
	Events	Total	Events	Total			
Aberle 2011	1877	26722	2000	26732	85.2%	0.94 [0.88, 1.00]	
Becker 2020	148	2029	150	2023	0.0%	0.98 [0.79, 1.22]	
Dekonina 2020	959	7895	974	7879	0.0%	0.98 [0.90, 1.07]	
Total (95% CI)		45943		45179	100.0%	0.79 [0.72, 0.87]	

- reduction of lung cancer-related mortality with LDCT in high-risk populations (age >40 + significant smoking exposure)
- limited data on harms
- further trials required to determine participant selection and optimal frequency / duration of screening
- potential for significant overdiagnosis of lung cancer
- trials ongoing for lung cancer screening in non-smokers

Lung cancer related mortality

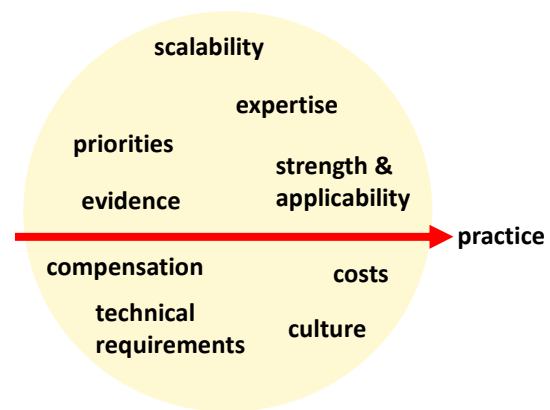
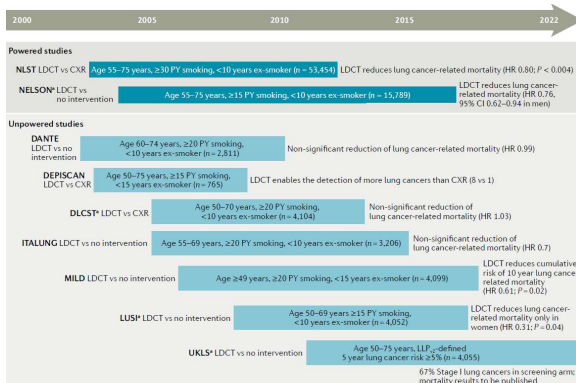
Aberle 2011	356	26722	443	26732	45.7%	0.80 [0.70, 0.92]
Infante 2015	59	1264	55	1186	6.8%	1.01 [0.70, 1.44]
Wille 2016	39	2052	38	2052	4.5%	1.03 [0.66, 1.60]
Total (95% CI)		45943		45179	100.0%	0.79 [0.72, 0.87]
Total events:	777		964			
Heterogeneity: Tau ² = 0.00; Chi ² = 4.70, df = 7 (P = 0.69); I ² = 0%						
Test for overall effect: Z = 4.92 (P < 0.00001)						
Test for subgroup differences: Not applicable						

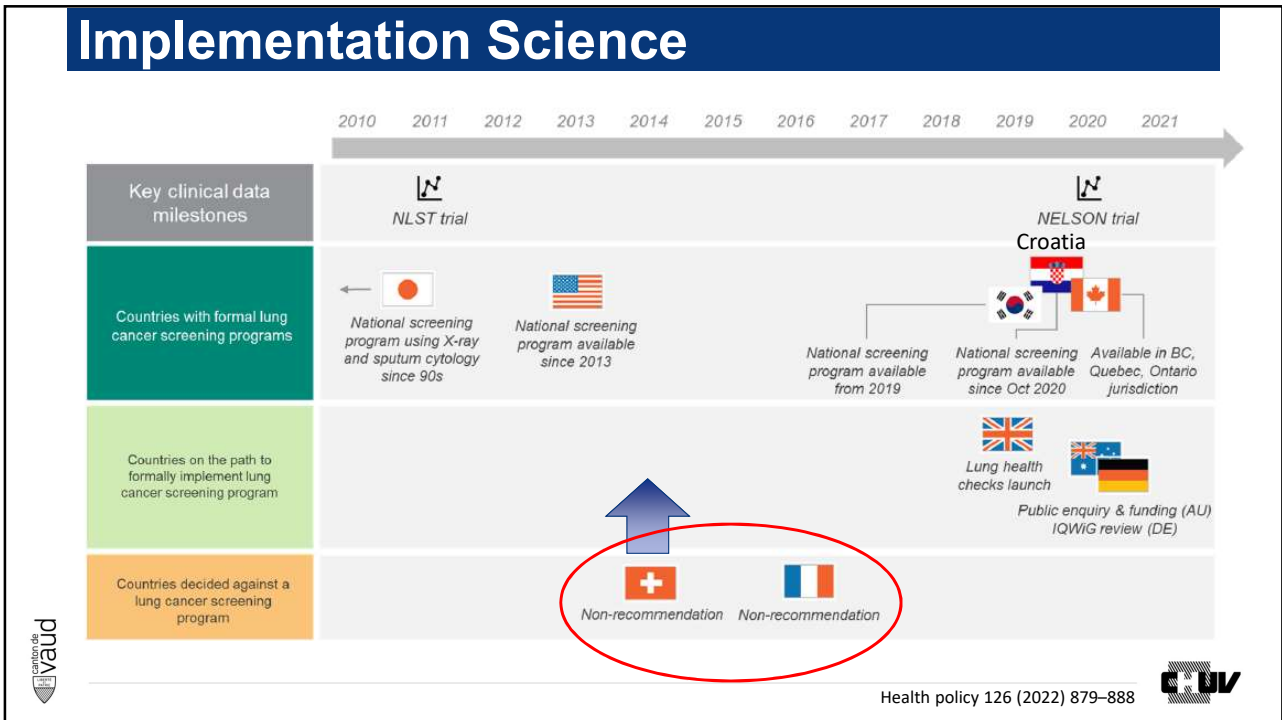
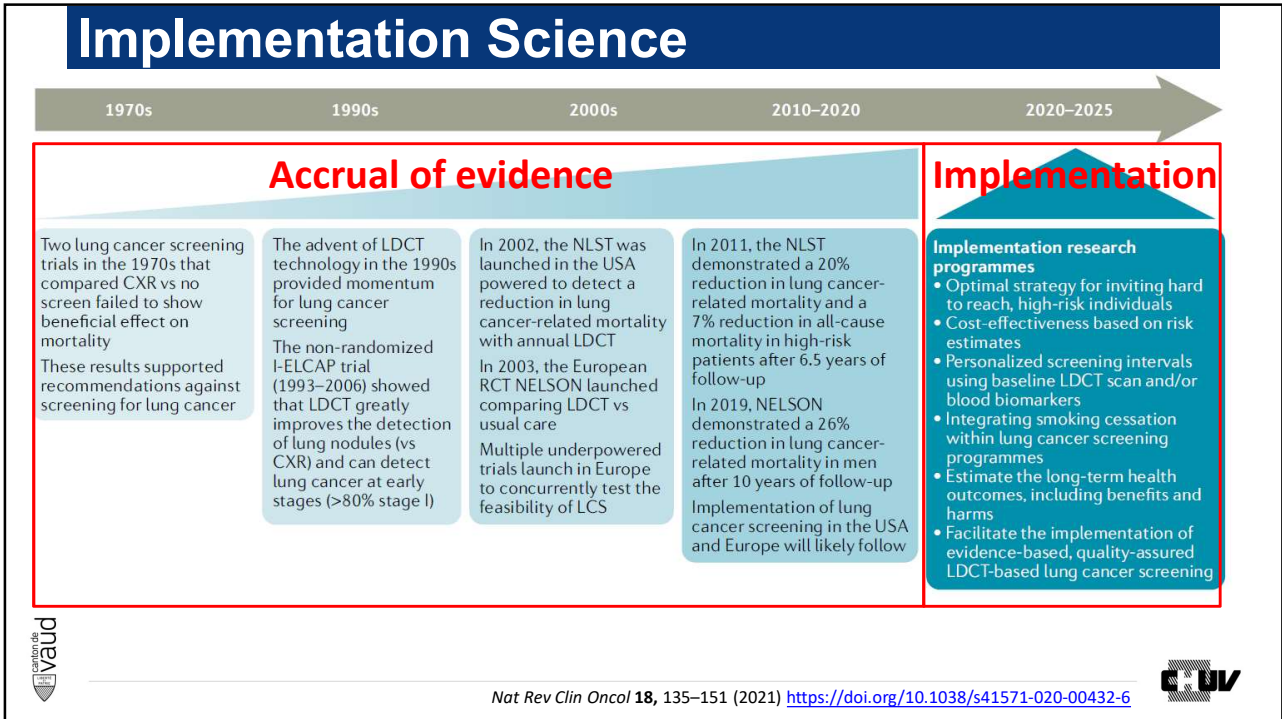


Bonney A et al. Cochrane Database of Systematic Reviews 2022, Issue 8. Art. No.: CD013829. DOI: 10.1002/14651858.CD013829.pub2.



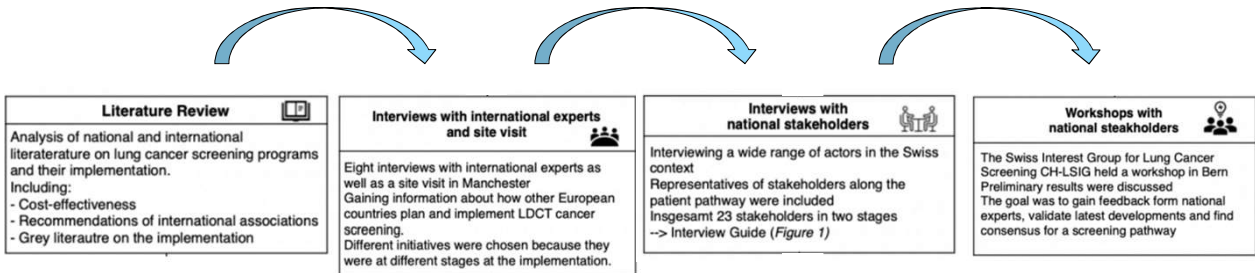
From Evidence to Practice





The Swiss Approach – feasibility of a national low-dose CT lung cancer screening program

Lisa Jungblut^a, Christophe von Garnier^b, Milo Puhan^c, Yuki Tomonaga^c, Cornel Kaufmann^d, Andrea Azzola^e, Urs Bürgi^e, Jens Bremerich^f, Martin Brutsche^g, Andreas Christe^h, Lukas Ebner^h, Johannes T Heverhagen^h, Christine Eichⁱ, Daniel Franzenⁱ, Isabelle Schmitt-Opitz^j, Didier Schneider^j, Jörg Spieldenner^k, Nigel Horwarth^l, Malcolm Kohler^m, Walter Wederⁿ, Alban Lovis^o, Reto Meuli^o, Matthias Menig^p, Catherine Beigelmann-Aubry^q, Tilo Niemann^r, Susanna Stöhr^s, Peter Vock^p, Oliver Senn^r, Stefan Neuner-Jehle^t, Kevin Selby^u, Simin Laures^v, Sebastian Ott^w, Thomas Frauenfelder^a



https://www.lungenliga.ch/fileadmin/user_upload/LLS/01_MetaNavigation/04_Fachpersonen/Research_Fund/2019/EXTERN_AL_USE_Part_1_Foundations_LDCTscreening.pdf

Jungblut L et al. The Swiss Approach – feasibility of a national low-dose CT lung cancer screening program. Swiss Med Wkly. 2022;152:w30154



International Experience: USA

- Reimbursed by insurances, offers all over the USA
- Screening according to U.S. Preventive Services Task Force: annual screening, 55-80 years old, min. 30 pack years, quit <15 yrs
- Mandatory decision aids and registry

Uptake < 5%
Adherence ≈ 50%



International Experience: UK

Manchester – Lung Health Check

- Oriented towards goals and implementation
- Innovative communication, focussed on lung health
- Preferential localisation in areas with high disease burden
- Engages communities

Interviews with international experts and site visit 



Uptake 60-70%
Adherence 90%

One stop clinic



FU & treatment

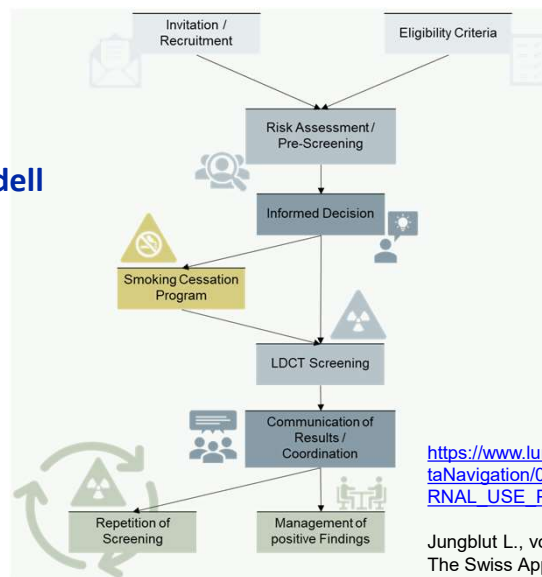


International Experience: UK → >20 Pilots



Possible Swiss Model

Mögliches Schweizer Modell



https://www.lungenliga.ch/fileadmin/user_upload/LLS/01_MetaNavigation/04_Fachpersonen/Research_Fund/2019/EXTERNAL_USE_Part_1_Foundations_LDCTscreening.pdf

Jungblut L., von Garnier C., Puhan M., Frauenfelder T.
The Swiss Approach – feasibility of a national low-dose CT lung cancer screening program Swiss Med Wkly 2022;152:w30154

Engage and Invite for Screening

- Tailor towards difficult-to-reach population, i.e. (ex-)smokers
- Frame as „lung health check“
- Employ positive language, no stigmatisation or generation of anxiety for lung cancer
- Broadly supported invitation of individuals at risk: contact health care professionals, personalised letters, NGO health associations / leagues, health insurances, media advertissments, cross-connection to other screening programs, e.g. breast cancer screening
- Consistent objective information, no marketing, no hidden agendas
- Cantonal differences expected

Assess individual risk

- Strike optimal balance between invested effort and identification of individuals at risk:
→ crucial to achieve an acceptable benefit-harm-cost ratio
- Risk prediction model **PLCom2012** more efficient to identify high-risk individuals than fixed criteria e.g. **USPSTF 2013**
- Frequently employed threshold for PLCom2012 >1.5% 6-year risk
- Assessment every 2 years

- | | |
|---|--|
| 1. current age | 6. Height |
| 2. smoking status | 7. Weight |
| 3. average number of cigarettes smoked per day when smoking | 8. race or ethnicity |
| 4. duration of smoking in years | 9. level of education |
| 5. years since quitting in former smokers | 10. history of chronic obstructive pulmonary disease |
| | 11. family history of lung cancer |
| | 12. personal history of cancer |



Tammemagi MC et al. NEJM. 2013;368(8):728-36.
Tammemagi MC et al. Lancet Oncol 2022; 23: 138-48.
<https://brocku.ca/lung-cancer-screening-and-risk-prediction/risk-calculators/>



Informed decision and tobacco cessation

Informed decision

- Evidence-based information (decision aids, e.g. Unisanté Lausanne already exist)

Smoking cessation program

- All stakeholders explicitly supported this
- Literature:
 - Presumed synergistic effect between screening and smoking cessation offer
 - Effect of positive screening results on smoking cessation unclear
 - Negative findings: no effect on motivation for smoking cessation
 - Most effective smoking cessation programs still require clarification



Moldovanu et al. Transl Lung Cancer Res 2021;10(2):1099-1109 | <http://dx.doi.org/10.21037/tlcr-20-899>



Imaging requirement for LDCTs

- Centres / mobile units for risk assessment and/or LDCT screening (one-stop clinic)
- Expert groups: recommend double reading (with CAD support)
- Reporting according to ESTI for nodules and additional findings (Lung CT Screening)
- Nodule management according to protocol (NELSON+, Lung-RADS)
- Standard communication of results to participants and general practitioners
- Screening interval: 1-2 years, likely personalised in future
- Training and certification accepted in principle
- Quality assurance register compulsory

LDCTs today vs future screening program

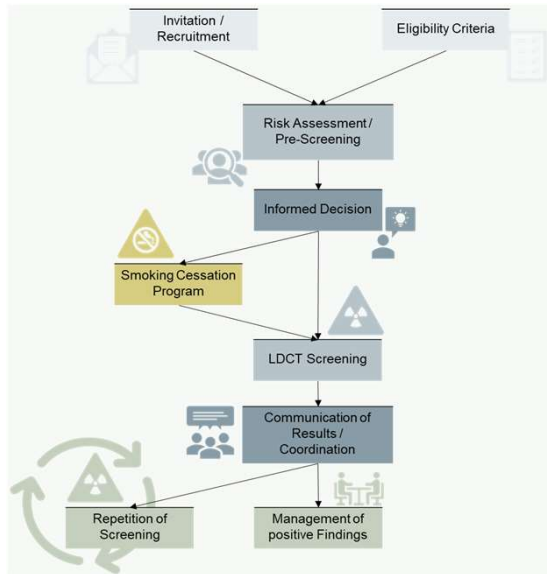
Today

- From very low dose to normal dose
- Mostly opportunistic, pseudo-indications
- No adherence to standards for implementation, (double) reading, computer-assisted detection
- No clear procedure
- No systematic volume-based assessment
- Risk of overdiagnosis
- Reporting to GP inconsistent

Lung Health Check

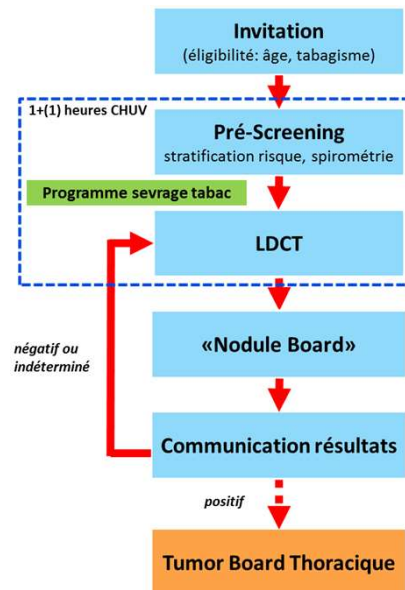
- Clear inclusion criteria and decision-making process
- Radiation dose defined
- Adherence to strict standards for implementation, (double) reading, computer-assisted detection
- Standardized operational procedures for interpretation and further investigations
- Standardized reporting to GP

Feasibility study



- Positive framing as a "lung health check"
- Broad-based invitation of risk population
- Centres / mobile units for risk assessment and/or LDCT screening (one-stop clinic)
- Evidence-based information, risk assessment and decision aid
- Smoking cessation program an important component
- Follow current guidelines of ESTI and others
- Quality assurance register
- Possible use of "navigators"

Programme pilote CHUV «poumon sain»



Other cancer screening programs

- Lung cancer, HR 0.72-0.87; NNS 130 (NELSON trial) – 320 (NSLT) reduced all cause mortality (NSLT)

H.J. de Koning et al. N Engl J Med. 2020; 382:503-513
 Aberle DR et al. N Engl J Med 2011; 365:395-409
 Bonney A et al. Cochrane Database of Systematic Reviews 2022, Issue 8.

- Colorectal cancer: HR 0.74-0.82 (~10yrs), NNS 455 – 1'000 no effect on all cause mortality

Fitzpatrick-Lewis D et al. Clin Colorectal Cancer 2016 Dec;15(4):298-313
 Tang V et al. BMJ 2015;350:h1662-h1662.
 Bretthauer M et al. N Engl J Med. 2022 Oct 27;387(17):1547-1556.

- Breast cancer: HR 0.80-0.85 (~13yrs) NNS varies by age and estimated mortality reduction attributable to screening

Age (years)	mortality reduction	NNS
40 - 49	10 / 15 / 40 %	3806 / 2449 / 753
50 - 59	10 / 15 / 40 %	2336 / 1503 / 462
60 - 69	10 / 15 / 40 %	1796 / 1156 / 355

Myers ER JAMA. 2015;314(15):1615-1634. doi:10.1001/jama.2015.13183

GP Concerns for lung cancer screening

- Fear to loose control over patient management
- Distributive justice, equal access for entire risk population
- How to communicate and manage (false) positive findings
- How to communicate and manage incidental findings, who is responsible
- “Carte blanche” to continue smoking potentially conferred by negative LDCT
- Radiation exposure over longer screening, e.g. 20-30 years

Pro – Contra LDCT lung cancer screening

Pro

- High disease burden, poor prognosis and limited progress in therapy
- Strong evidence from adequately powered RCTs
- Cost-effectiveness
- Progress in dealing with unclear findings
- Radiation dose increasingly lower
- Limited issues with unclear malignancy and overtreatment
- Broader preventive approach

Contra

- Complexity of implementation
- Absolute costs
- False positive results
- Additional work
- Dealing with stigma

Lung Cancer Screening: Conclusion

- ✓ Accumulating evidence that LDCT screening:
 - increases the probability to detect lung cancer (NNS 130)
 - increases the likelihood to detect early lung cancer stages I - II (I: 13% → 60%)
 - is associated with a decrease in lung cancer mortality (RR 20-25%)
- ✓ Cost per quality-adjusted life year (QALY) gained likely <50 kCHF
- ✓ Important questions to clarify: effect on tobacco cessation, interval, duration, costs
- ✓ CH: CH-LSIG prepares implementation, CSC recommendation awaited (15.11.22), need for pilot programs in CH
- ✓ Routine screening not recommended