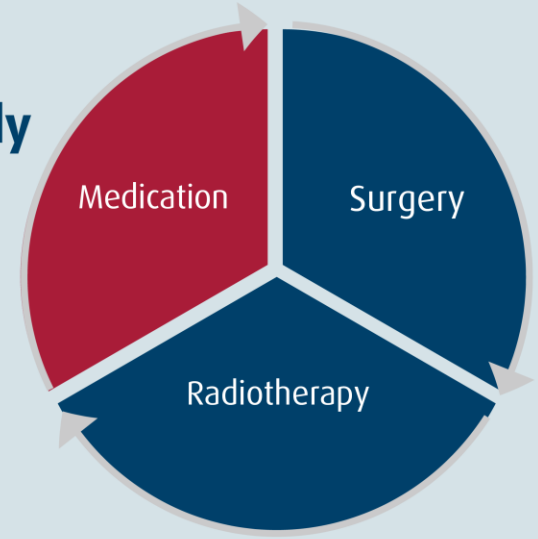
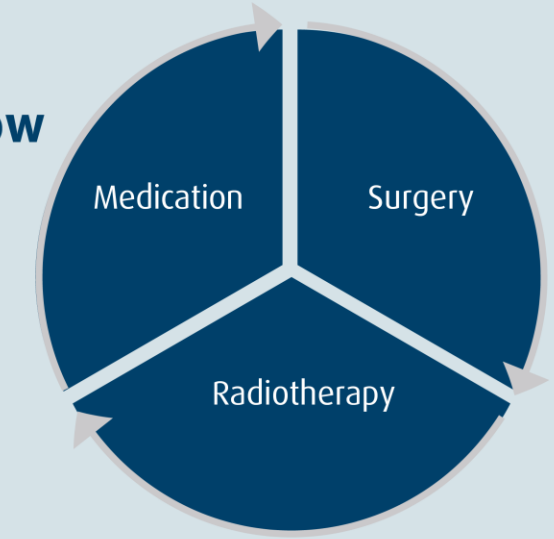
INSPIRE

- data capture of systemic anti-cancer treatment to the Cancer Registry of Norway

Previously



Now



A public-private-voluntary partnership

abbvie · AMGEN · AstraZeneca · Bristol Myers Squibb · HELSE SØR-ØST · HELSE MIDT-NORGE · HELSE VEST · HELSE NORD

Janssen · MERCK · MSD · NOVARTIS · Kreftregisteret · KREFTFORENINGEN · invena · LMI

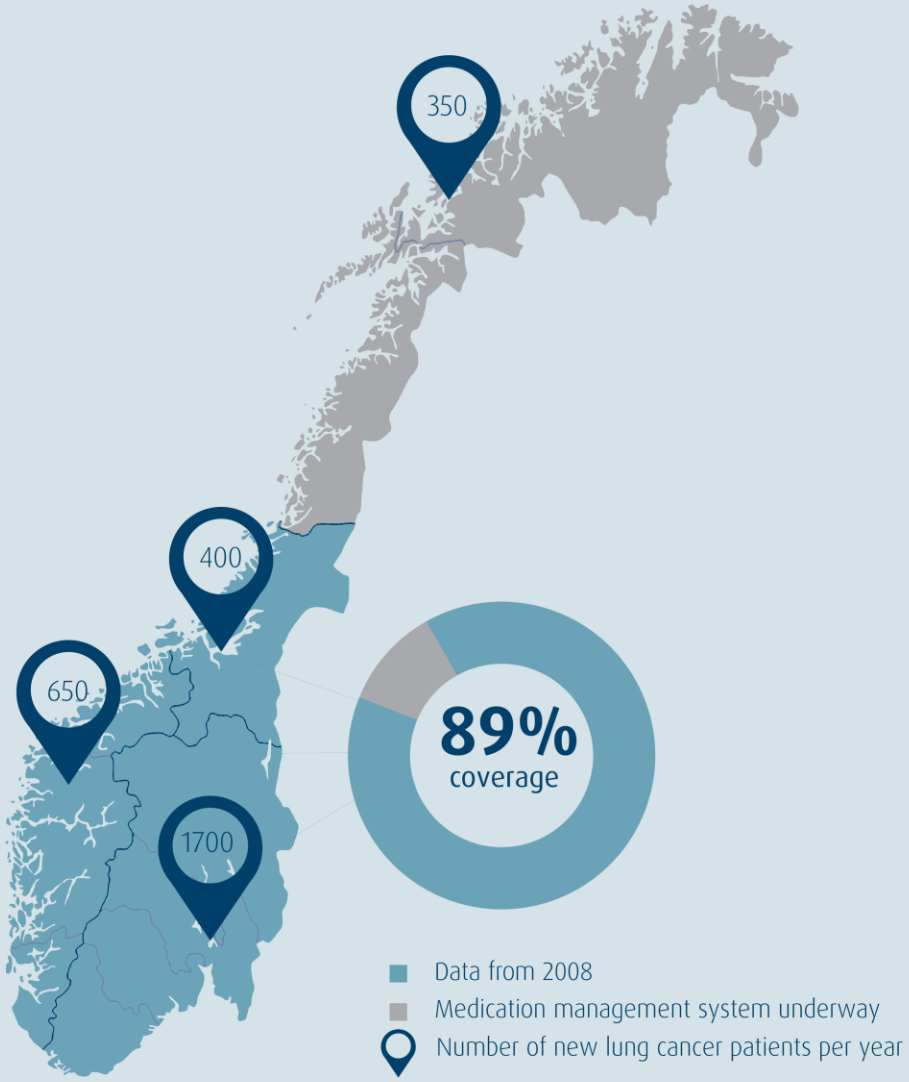
Pfizer · Roche · SANOFI GENZYME · Takeda

INSPIRE

- data capture of systemic anti-cancer treatment to the Cancer Registry of Norway

So far collected:

10.018
Lung cancer patients with systemic anti-cancer treatment



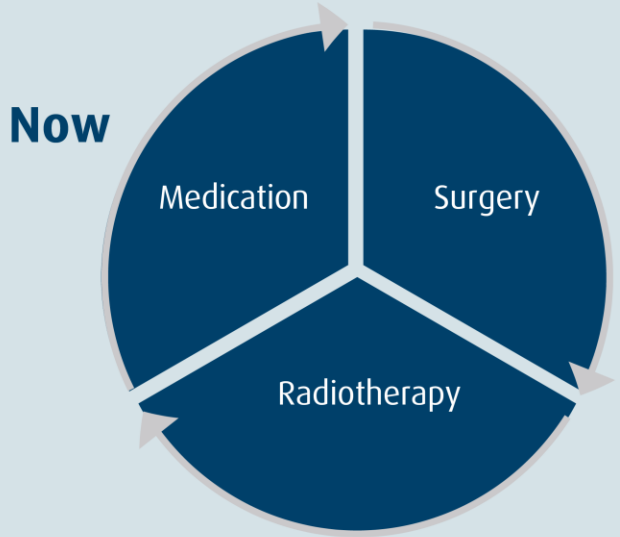
Data sources

Hospital medication management systems

H-prescriptions from the Patient Registry (oral anti-cancer drugs taken at home)

INSPIRE

- data capture of systemic anti-cancer treatment to the Cancer Registry of Norway



A public-private-voluntary partnership

abbvie
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AstraZeneca
Bristol Myers Squibb
HELSE SØR-ØST
HELSE MIDT-NORGE
HELSE VEST
HELSE NORD
Janssen
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MSD
NOVARTIS
Kreftregisteret
KREFTFORENINGEN
invena
LMI
Pfizer
Roche
SANOFI GENZYME
Takeda

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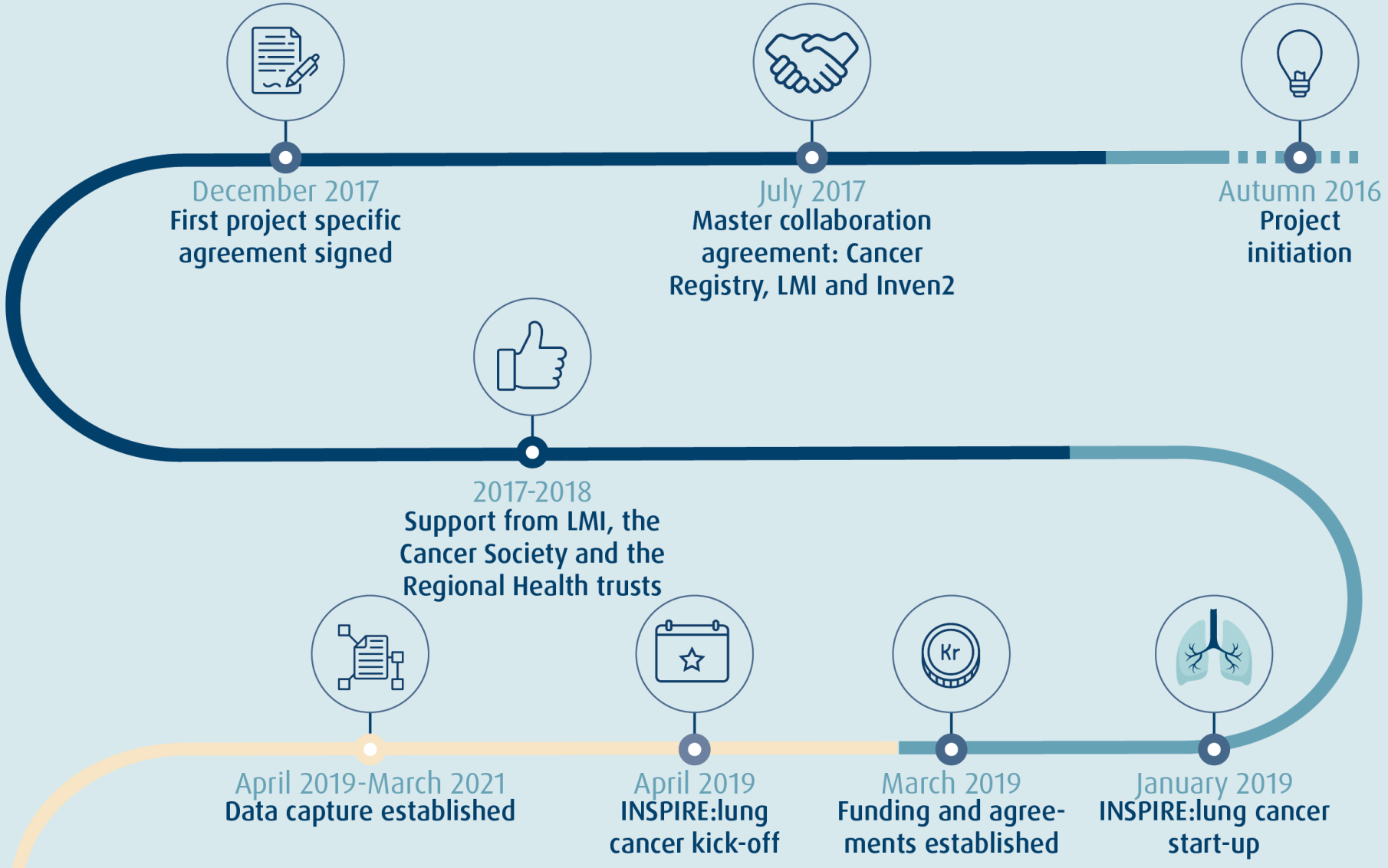
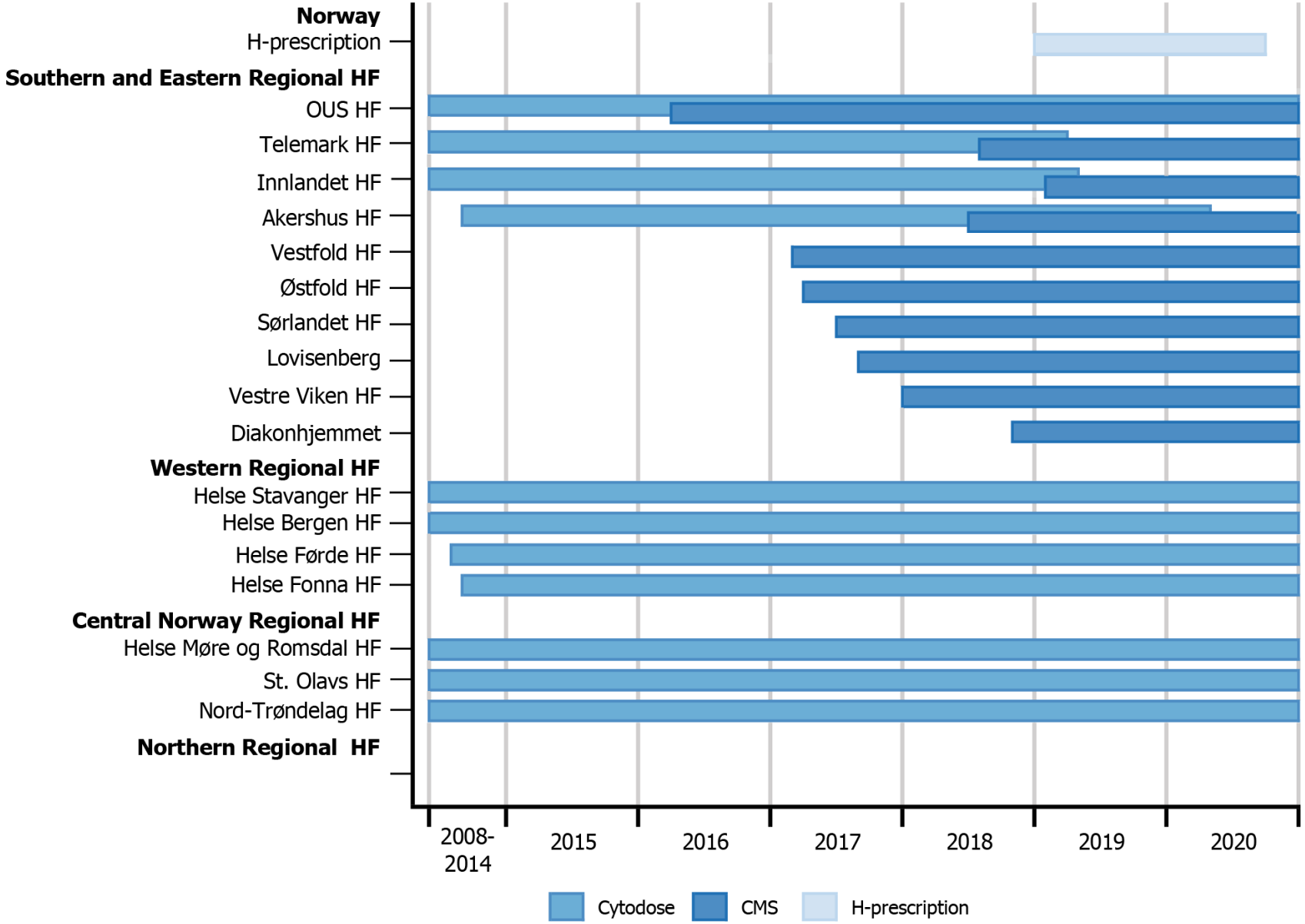
- timeline



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. ISBN: 978-82-473-0090-9.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data capture from the Regional Health Trusts

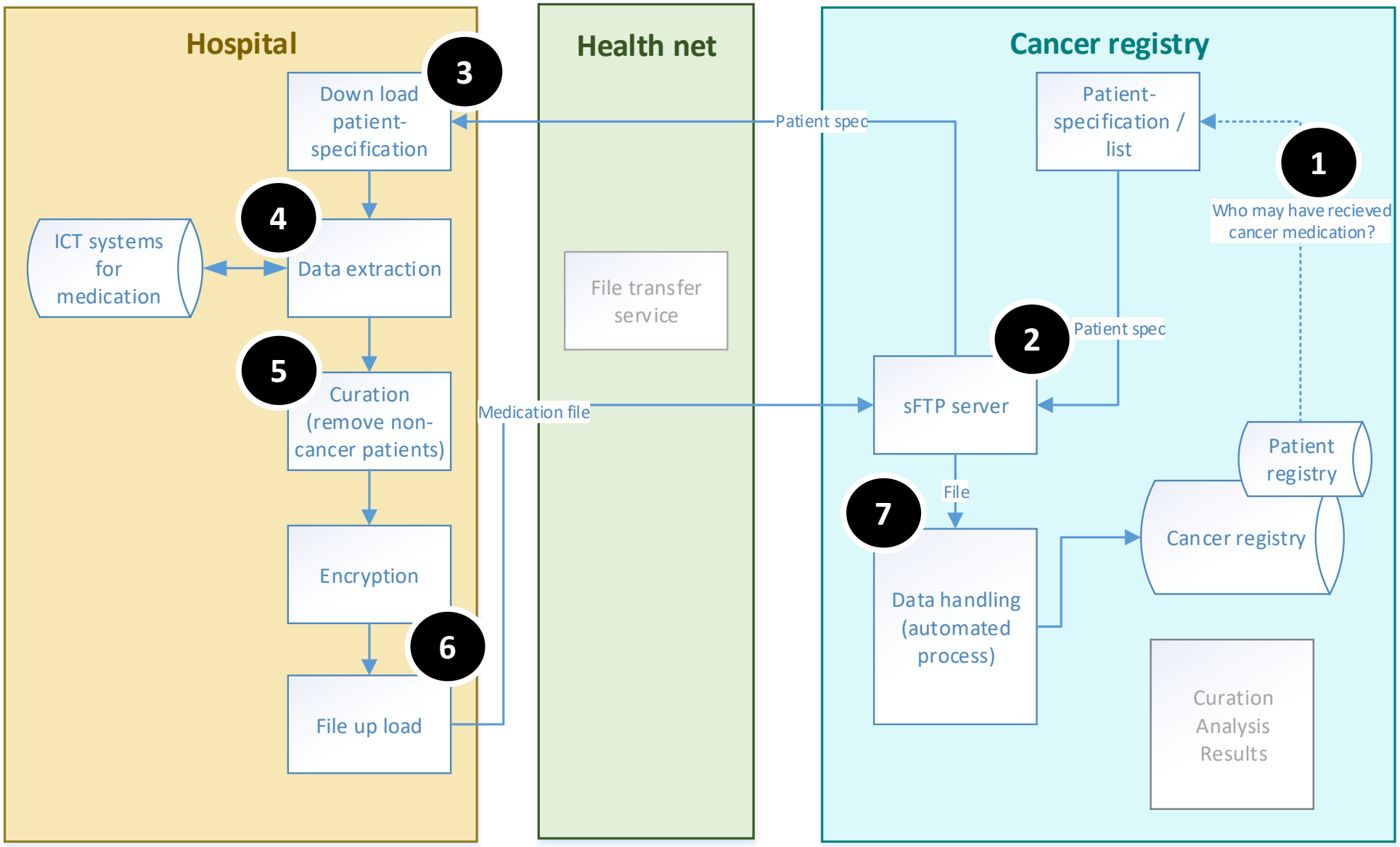


Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 3.3, figure 3.3.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Datasource
- Data capture from CMS, Cytodose (in-hospital use)
- Data capture from H-prescription (cancer drugs taken at home)

Inclusion
- Treated after 1 January 2008
- All cancer types

Comments
- 2008–2014 combined
- Gradual implementation of CMS in Southern and Eastern Regional Health Trust, and Cytodose have been in use during the transition to CMS



Dataflow for reporting systemic anti-cancer treatment

1. Cancer registry compiles a list of cancer patients to the hospitals
2. Cancer registry zips, encrypts and upload the list of cancer patients
3. Hospital downloads the list of cancer patients
4. Hospital extract data from cancer medication systems
5. Hospital remove non-cancer patients from the cancer medication data extraction, using the list of cancer patients from the Cancer registry
6. Hospital zips, encrypts and upload the cancer medication data
7. Cancer registry downloads cancer medication data

Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 3.2, figure 3.1
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Substance	Substance from hospitals	ATC code
Karboplatin	Carboplatin	**L01XA02**
	Carboplatin calypso	
	Karboplatin	
	Karboplatin PETREMAC	
	Karboplatin studie ovar12	
	Karboplatin CA209-901	
	Karboplatin MX39795	

3) ATC code is added

2) The different substance names are mapped to the correct substance (norwegian spelling)

1) Data from the hospitals have different names for substances

Mapping of substance names

- Data from the hospitals are raw data needing adjustments before data is can be curated, shown is an example of mapping of substance names

Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 4.2.1, figure 4.1.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Mapping of treatment regimens

- Data from the hospitals are raw data needing adjustments before data is can be curated, shown is an example of mapping of treatment regimen names

Treatment regimen	Name of treatment regimens from the hospitals
Karboplatin+Pembrolizumab+Pemetreksed	3P Pemetrexed+Carboplatin+Pembrolizumab
	B102 Lunge, Pembrolizumab-Alimta-Karboplatin, del 1
	Canopy 1 kohort A kur 1-4
	Karboplatin AUC5/pembrolizumab/pemetreksed
	Kr-Pembrolizumab-Pemetrexed-Karboplatin
	Med-Pembrolizumab-Pemetrexed-Karboplatin
	Pembrolizumab/pemetreksed/karboplatin AUC5
	Pembrolizumab-Pemetrexed-Karboplatin
	Platinum - Pemetrexed - Pembrolizumab

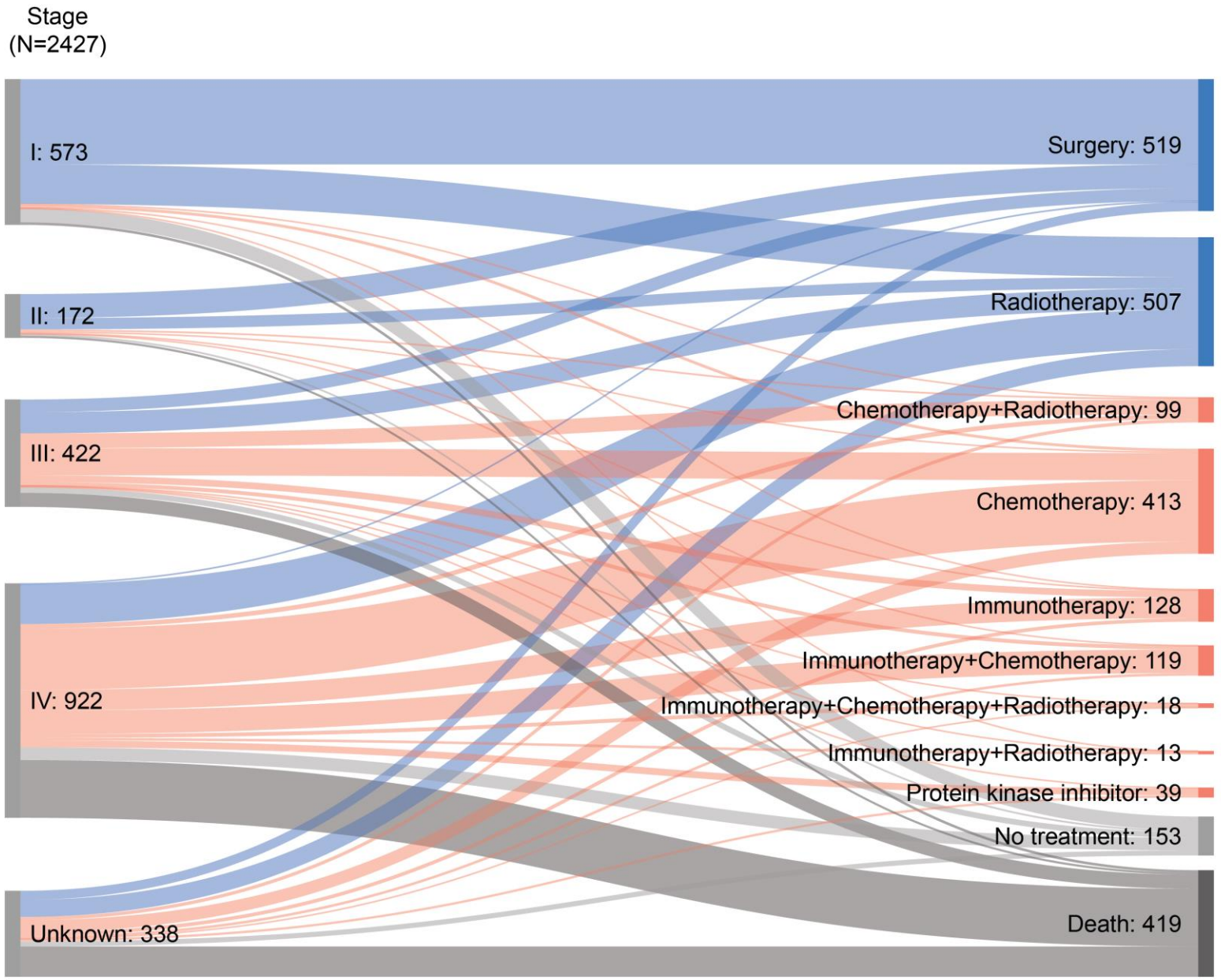
3) We create new names for all treatment regimens:
a) Substances (norwegian)
b) + (if more than one)
c) Alphabetic order

2) The treatment regimens are mapped to a common name

1) Data from the hospitals have different names for treatment regimens

Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 4.2.1, figure 4.2
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Initial treatment for lung cancer by stage



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.2, figure 6.1.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source

- Basis registry (Cancer Registry)
- Quality registry for lung cancer (Cancer Registry)
- Cancer medication management systems (Hospitals)
- Medication taken at home (H-prescription, Patient Registry)

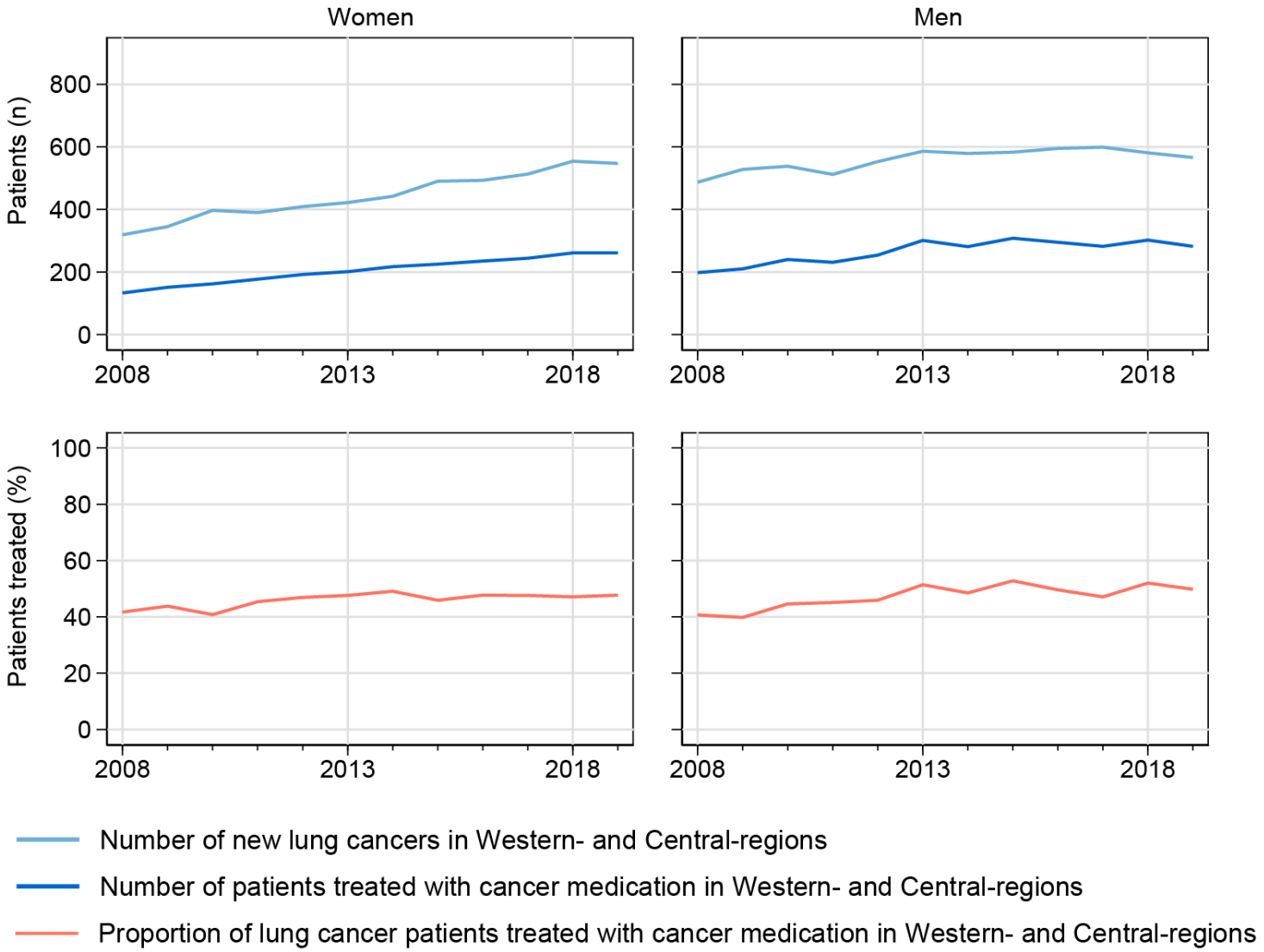
Inclusion

- Cancer in lung and trachea
- Diagnostic period 01.01.2019–31.10.2019
- Living in South-Eastern-, Western- and Central Norway Regional Health Trusts at time of diagnosis
- Follow-up period 01.01.2019-31.12.2019

Comments

- Stage: cTNM (TNM8)
- Not shown is that some patients with surgery gets postoperative chemotherapy
- “No treatment” may contain patients receiving treatment at a later stage
- ”Death» refers to all-cause mortality
- Grouping of treatment based on date of treatment within a 14 day interval

Proportion of lung cancer patients treated with anti-cancer medication in Western- and Central-regions by sex



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.2.1, figure 6.2
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source

- Basis registry (Cancer Registry)
- Cancer medication management systems (Hospitals)

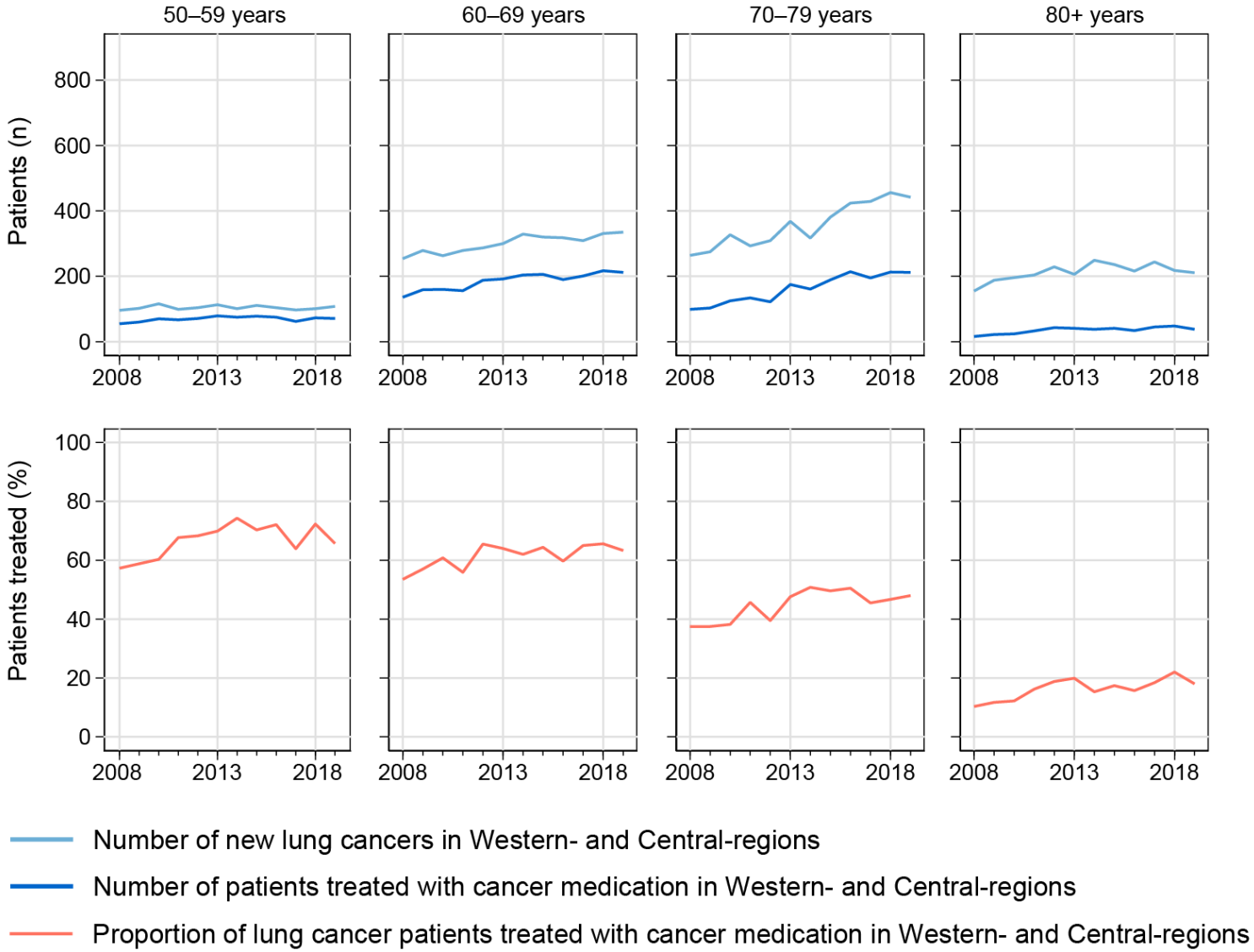
Inclusion

- Cancer in lung and trachea
- Diagnostic period 2008-2019
- Living in Western- and Central Norway Regional Health Trusts at time of diagnosis
- Treated with (≥1) anti-cancer medication regimen in Western- and Central Norway Regional Health Trusts in 01.01.2008-31.08.2020
- One incidence per patient

Comments

- H-prescribed cancer medication taken at home is not included

Proportion of lung cancer patients treated with anti-cancer medication in Western- and Central-regions by age



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.2.1, figure 6.3.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source

- Basis registry (Cancer Registry)
- Cancer medication management systems (Hospitals)

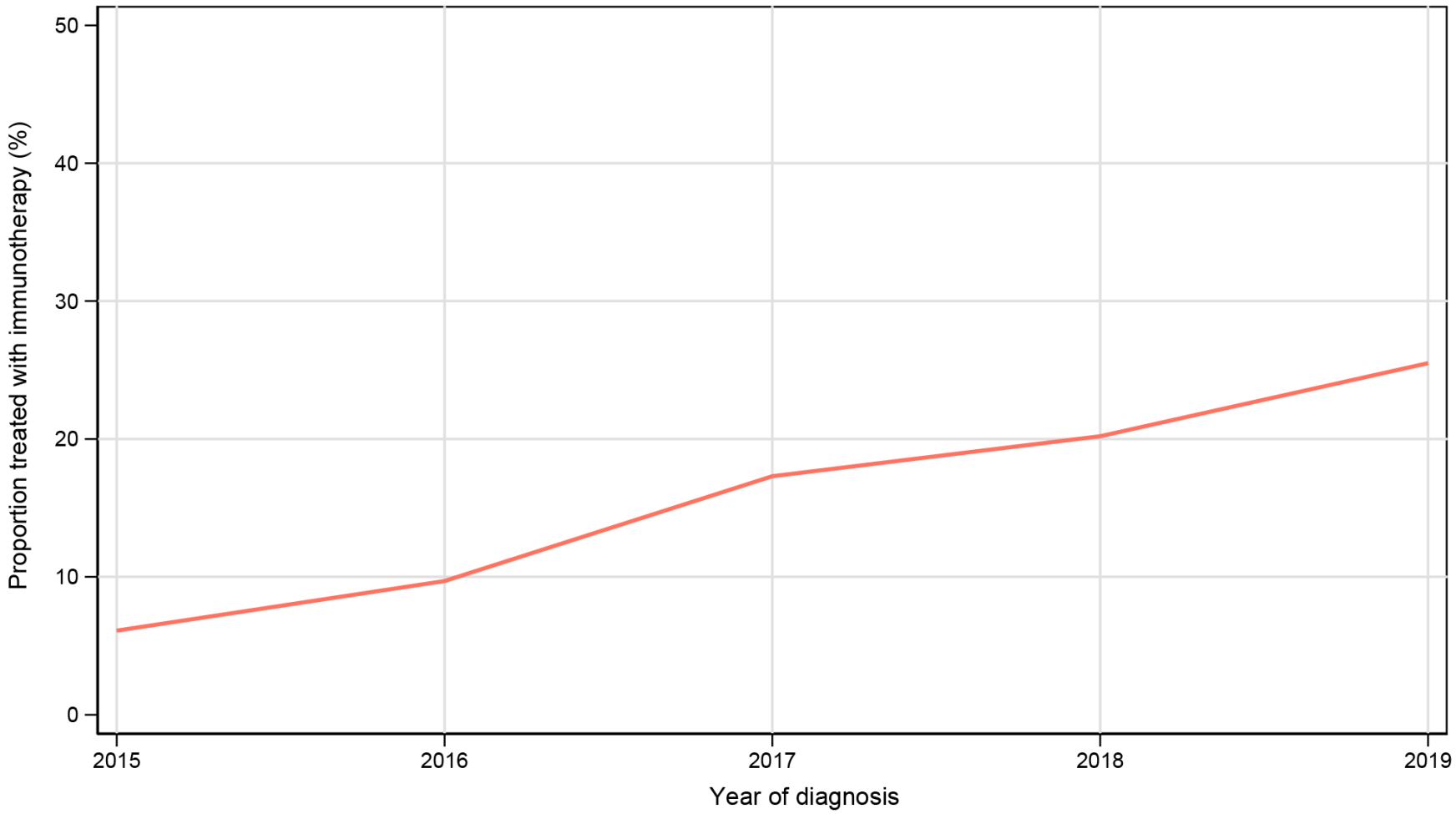
Inclusion

- Cancer in lung and trachea
- Diagnostic period 2008-2019
- Living in Western- and Central Norway Regional Health Trusts at time of diagnosis
- Treated with (≥1) anti-cancer medication regimen in Western- and Central Norway Regional Health Trusts in 01.01.2008-31.08.2020
- One incidence per patient

Comments

- Age at time of diagnosis
- H-prescribed cancer medication taken at home is not included

Proportion of lung cancer patients recieving immunotherapy



Data source

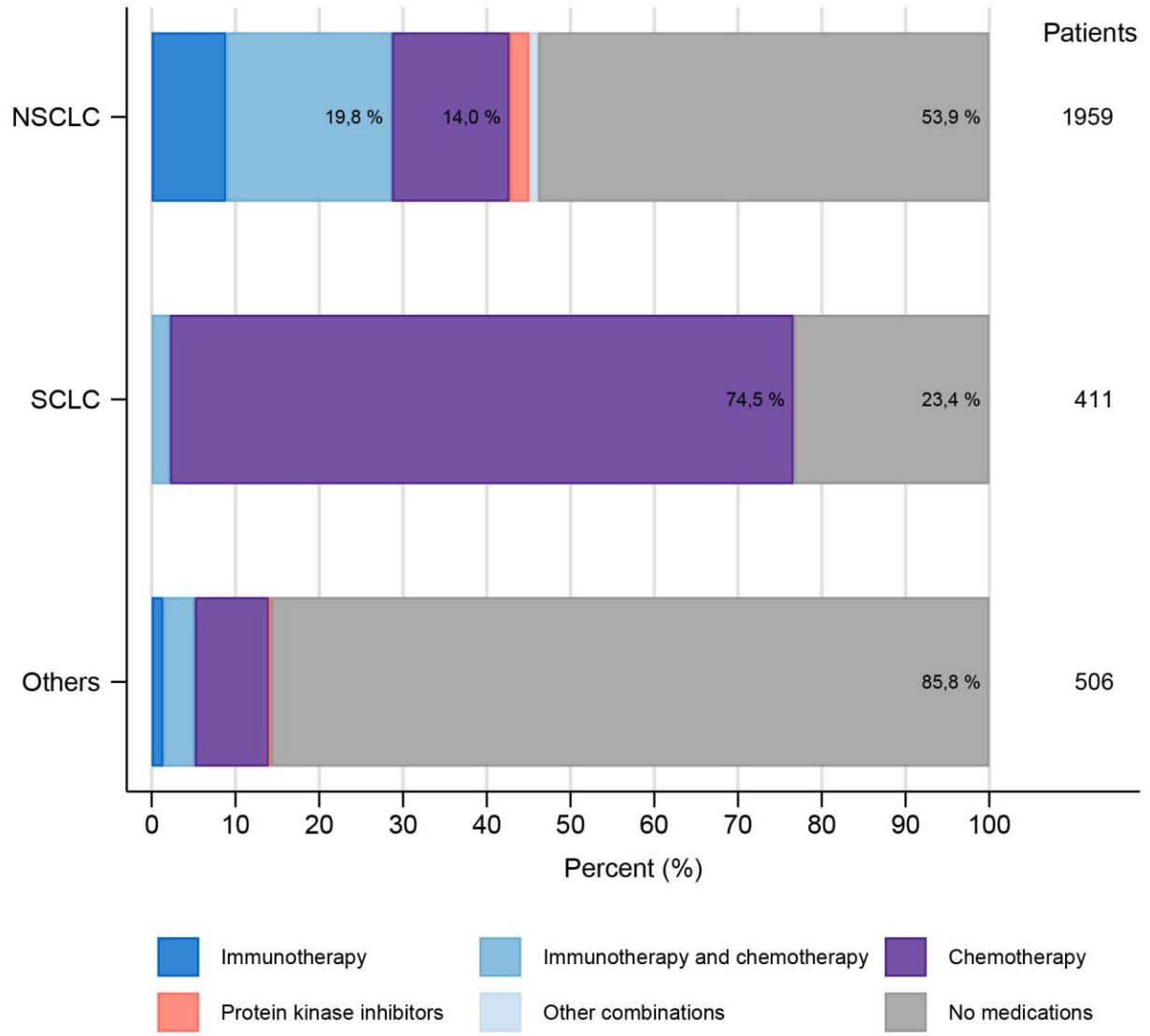
- Basis registry (Cancer Registry)
- Cancer medication management systems (Hospitals)

Inclusion

- Cancer in lung and trachea
- Diagnostic period 2015-2019
- Living in Western- and Central Norway Regional Health Trusts at time of diagnosis
- Treated in Western- and Central Norway Regional Health Trusts in 01.01.2015-31.08.2020
- One incidence per patient

Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.2.1, figure 6.4.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Proportions of types of medications used for treating lung cancer patients diagnosed in 2019 in Norway



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.2.1, figure 6.5.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source

- Basis registry (Cancer Registry)
- Cancer medication management systems (Hospitals)
- Cancer medication taken at home (H-prescription, Patient Registry)

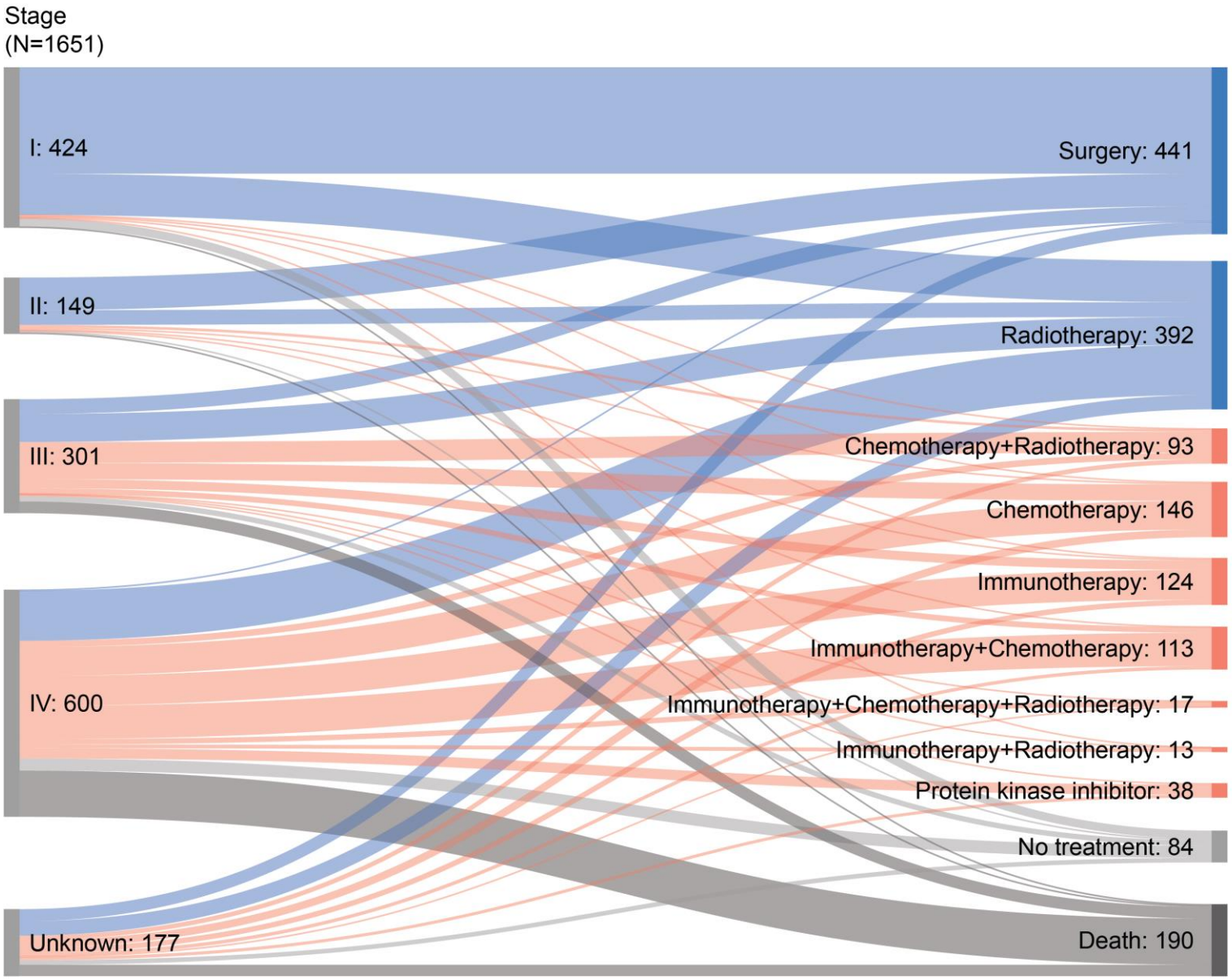
Inclusion

- Cancer in lung and trachea
- Year of diagnosis: 2019
- Living in South-Eastern-, Western- and Central Norway Regional Health Trusts at time of diagnosis
- Follow-up period 01.01.2019-31.08.2020

Comments

- Patients in ”No medications» group may have received surgery or radiotherapy
- ”Others” includes large cell neuroendocrine carcinoma, carcinoid, tumors of unknown morpohology and others

First line of treatment of NSCLC by stage



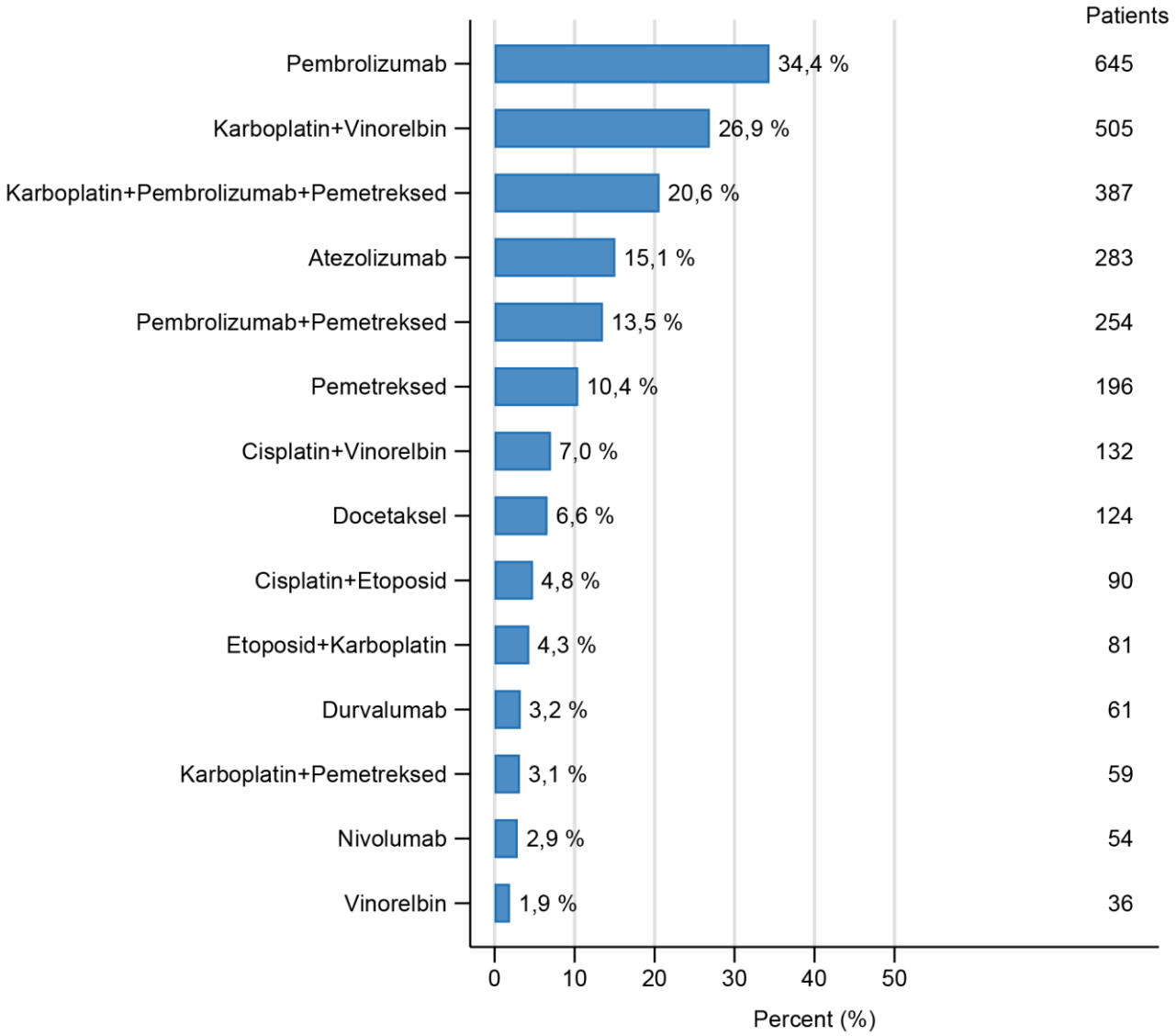
Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter Chapter 6.3, figure 6.6.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source
- Basis registry (Cancer Registry)
- Quality registry for lung cancer (Cancer Registry)
- Cancer medication management systems (Hospitals)
- Medication taken at home (H-prescription, Patient Registry)

Inclusion
- NSCLC in lung and trachea
- Diagnostic period 01.01.2019–31.10.2019
- Living in South-Eastern-, Western- and Central Norway Regional Health Trusts at time of diagnosis
- Follow-up period 01.01.2019-31.12.2019

Comments
- Stage: cTNM (TNM8)
- Not shown is that some patients with surgery gets postoperative chemotherapy
- “No treatment” may contain patients receiving treatment at a later stage
- ”Death» refers to all-cause mortality
- Grouping of treatment based on date of treatment within a 14 day interval

Most common treatment regimens at hospitals for NSCLC patients



Data source

- Basis registry (Cancer Registry)
- Cancer medication management systems (Hospitals)

Inclusion

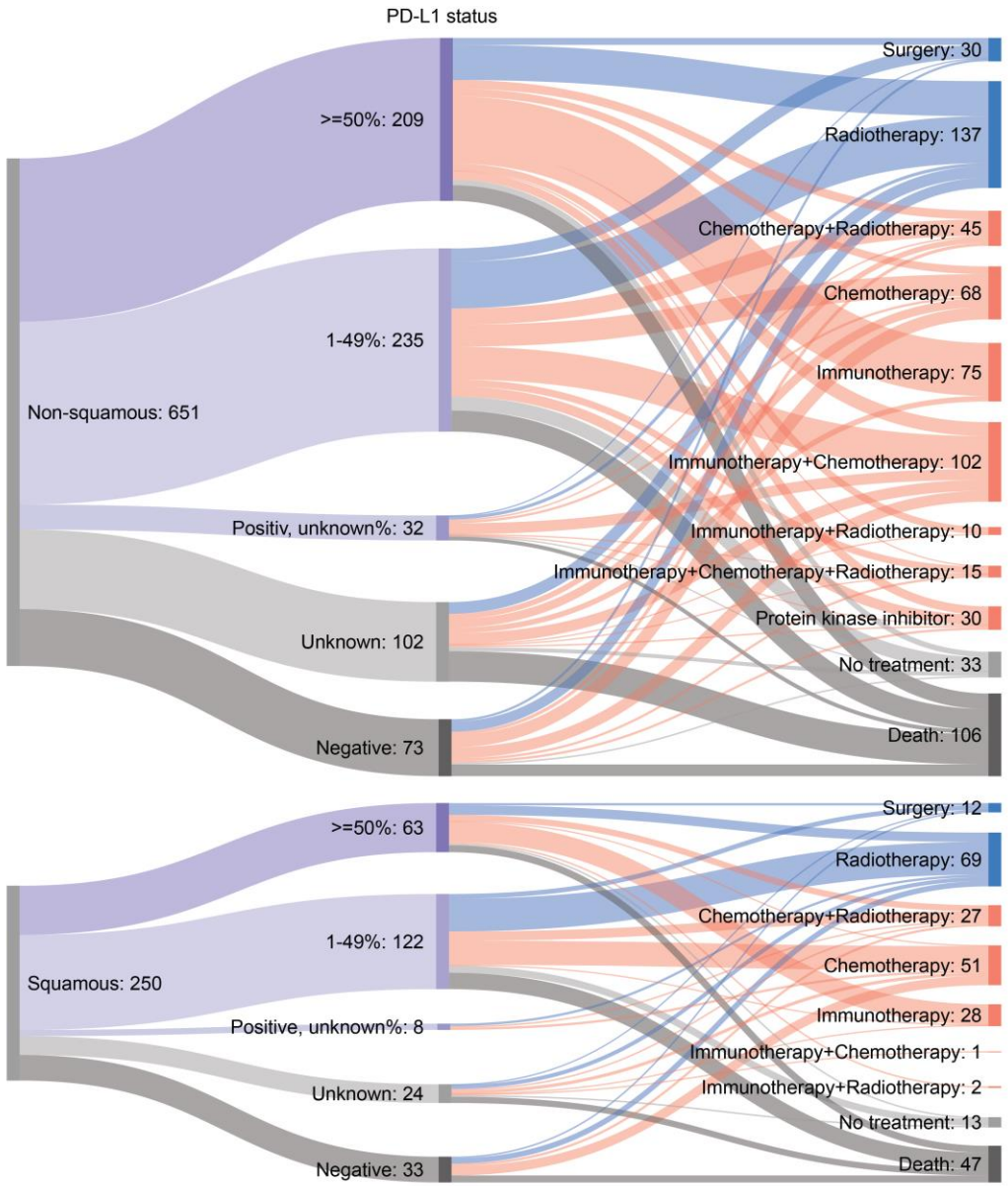
- NSCLC in lung and trachea
- Diagnostic period 1953-2019
- Treated in South-Eastern-, Western- and Central Norway Regional Health Trusts in the period 01.01.2019–31.08.2020

Comments

- Total number of patients treated with anti-cancer medication: N = 1877
- Patients may contribute to more than one group

Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.3, figure 6.7.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

First line of treatment of NSCLC stage III and IV by histology and PD-L1 positivity



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.3.2, figure 6.9.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source

- Basis registry (Cancer Registry)
- Quality registry for lung cancer (Cancer Registry)
- Cancer medication management systems (Hospitals)
- Medication taken at home (H-prescription, Patient Registry)

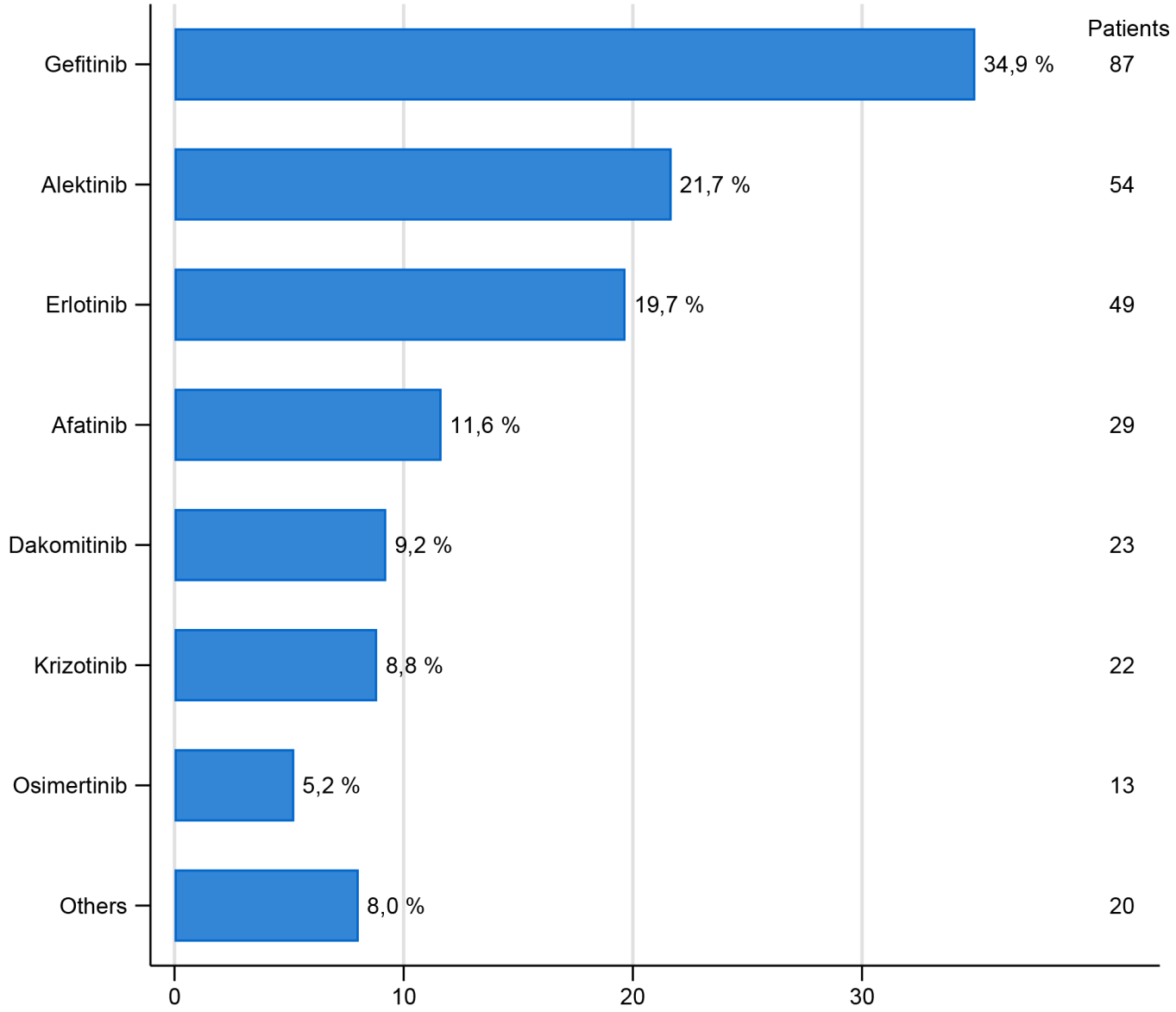
Inclusion

- NSCLC in lung and trachea
- Stage III og IV (TNM8)
- Diagnostic period 01.01.2019–31.10.2019
- Living in South-Eastern-, Western- and Central Norway Regional Health Trusts at time of diagnosis
- Follow-up period 01.01.2019-31.12.2019

Comments

- Grouping of treatment based on date of treatment within 14d interval

Most common protein kinase inhibitors taken at home by patients with NSCLC



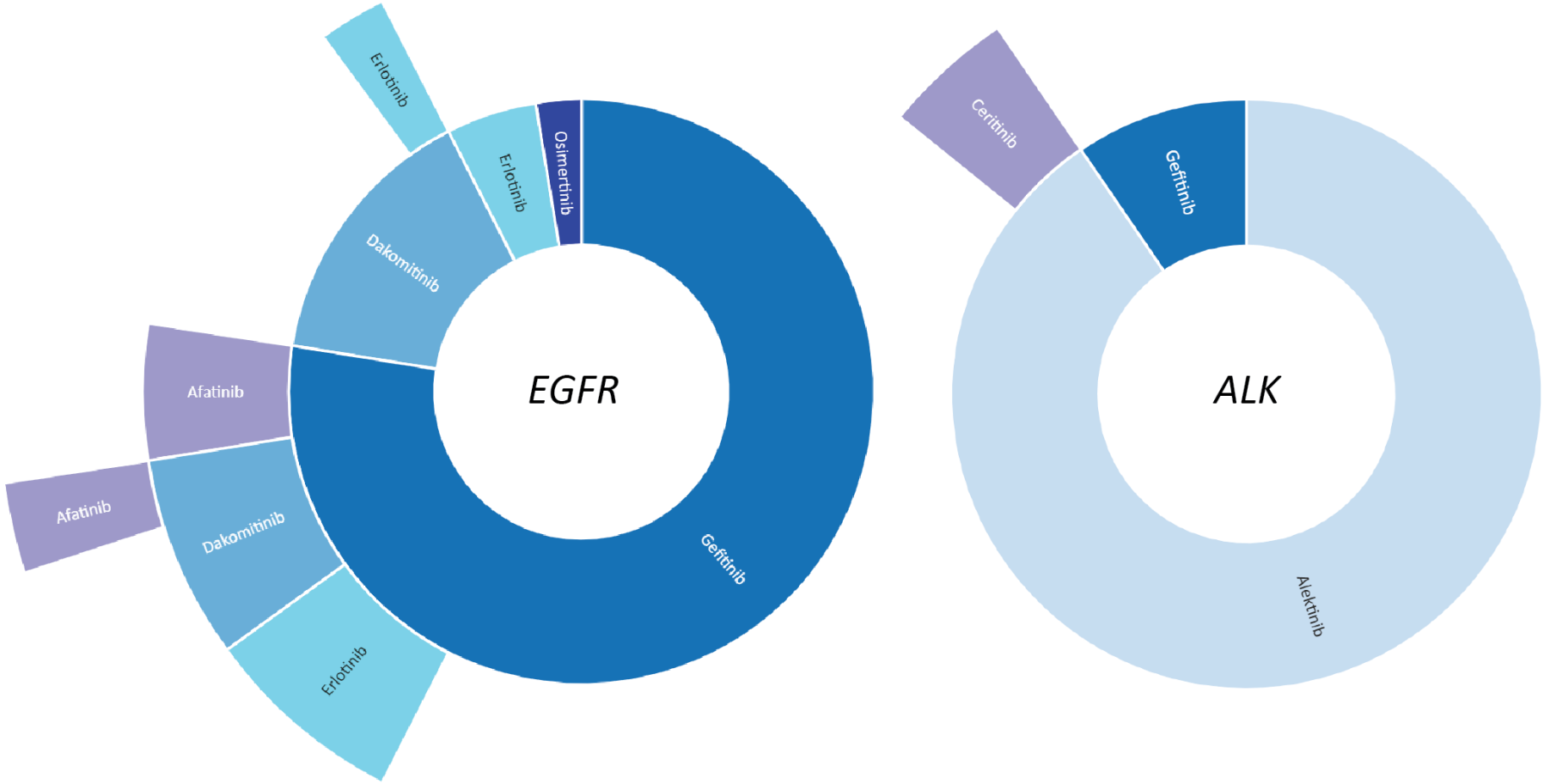
Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.3.3, figure 6.10.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source
- Basis registry (Cancer Registry)
- Cancer medication taken at home (H-prescription, Patient Registry)

Inclusion
- NSCLC in lung and trachea
- Diagnostic period 1953-2019
- Treated in South-Eastern-, Western- and Central Norway Regional Health Trusts in the period 01.01.2019–31.08.2020

Comments
- Total number of patients treated with anti-cancer medication from H-prescriptions: N = 249
- Patients may contribute to more than one group

Treatment lines for lung cancer patients with *EGFR*- or *ALK*-mutations



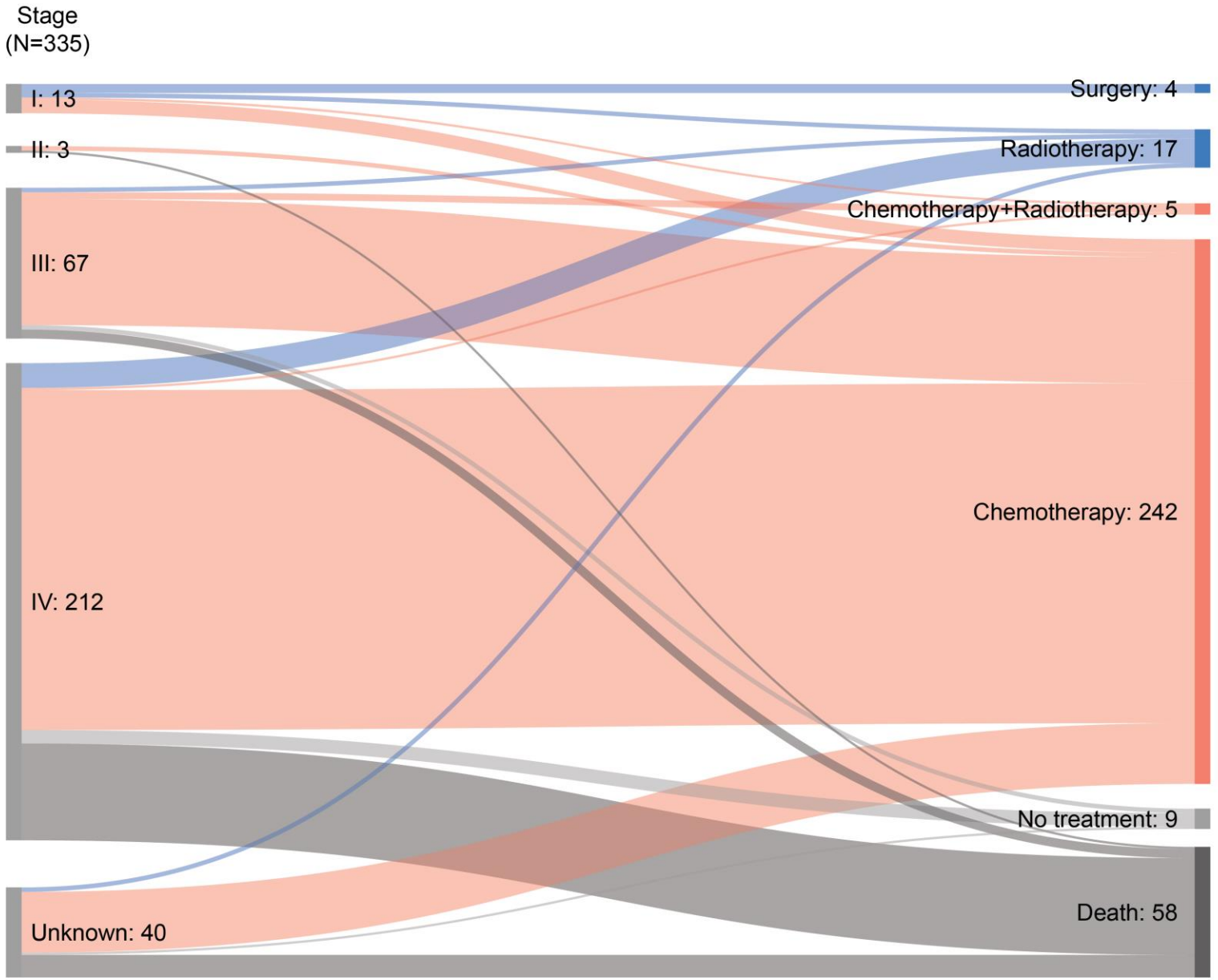
Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.3.3, figure 6.11.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source
- Basis registry (Cancer Registry)
- Quality registry for lung cancer (Cancer Registry)
- Cancer medication taken at home (H-prescription, Patient Registry)

Inclusion
- NSCLC in lung and trachea
- Having *EGFR*-mutation or *ALK*-mutation
- Year of diagnosis: 2019
- Treated in the period 01.01.2019-31.08.2020

Comments
- EGFR-group <50 patients
- ALK-group <25 patients
- Patient may still be under treatment at end of follow-up at 31.08.2020.

First line of treatment of SCLC by stage



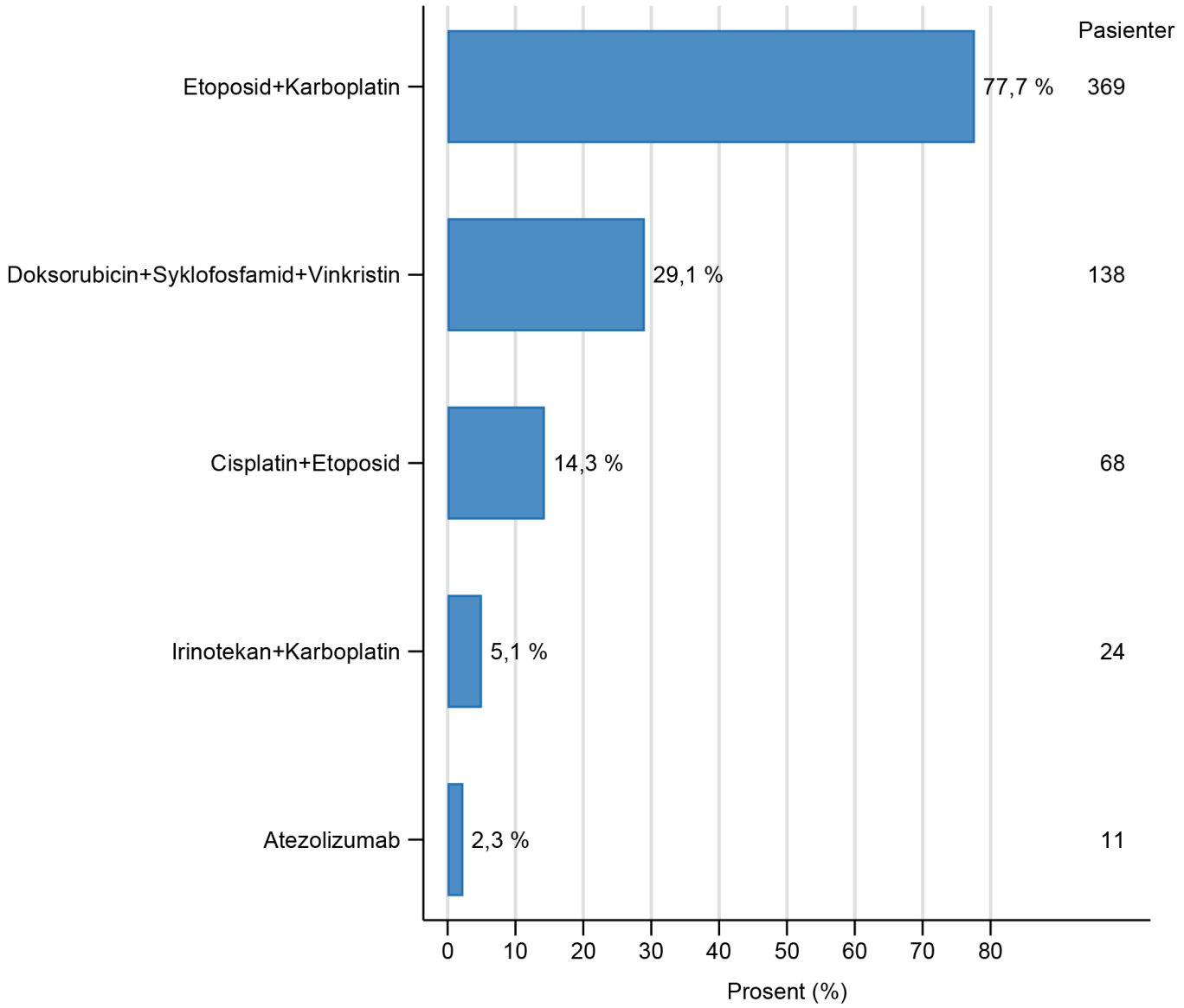
Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.4, figure 6.12.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source
- Basis registry (Cancer Registry)
- Quality registry for lung cancer (Cancer Registry)
- Cancer medication management systems (Hospitals)
- Cancer medication taken at home (H-prescription, Patient Registry)

Inclusion
- SCLC in lung and trachea
- Diagnostic period 01.01.2019–31.10.2019
- Living in South-Eastern-, Western- and Central Norway Regional Health Trusts at time of diagnosis
- Follow-up period 01.01.2019-31.12.2019

Comments
- Stage: cTNM (TNM8)
- “No treatment” may contain patients receiving treatment at a later stage
- ”Death» refers to all-cause mortality
- Grouping of treatment based on date of treatment within a 14 day interval

Most common treatment regimens at hospitals for SCLC patients



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.4, figure 6.13.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source

- Basis registry (Cancer Registry)
- Quality registry for lung cancer (Cancer Registry)
- Cancer medication management systems (Hospitals)

Inclusion

- SCLC in lung and trachea
- Diagnostic period 1953–2019
- Treated in South-Eastern-, Western- and Central Norway Regional Health Trusts in the period 01.01.2019–31.08.2020

Comments

- Total number of patients treated with anti-cancer medication: N = 475
- Patients may contribute to more than one group
- Atezolizumab is not approved for SCLC, but may be part of a clinical study

Number of treatment cycles per regimen

	Group	Treatment cycles (% patients) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22+	Number of patients
Chemotherapy																								
Etoposid+Karboplatin	Lung cancer	21	16	10	40	4	3	3	4															349
	NSCLC	29	51	8	8	2			2															49
	SCLC	20	9	12	43	5	3	3	5															270
Karboplatin+Vinorelbin	Lung cancer	16	16	30	35	1	1		1															281
Cisplatin+Etoposid	Lung cancer	18	45	7	30																			138
Cisplatin+Vinorelbin	Lung cancer	31	23	13	30	4																		111
Doksorubicin+Syklofosfamid+Vinkristin	Lung cancer	27	16	24	30	2		2																63
Docetaksel	Lung cancer	29	38	7	12	7	2		2											2				42
Karboplatin+Pemetreksed	Lung cancer	35	9	21	32		3																	34
Pemetreksed	Lung cancer	25	29	7	14	7	4				4	4							4			4		28
Vinorelbin	Lung cancer	33	59	4	4																			27
Irinotekan+Karboplatin	Lung cancer	30	50	10	10																			10
Immunotherapy																								
Pembrolizumab	Lung cancer	19	10	11	9	8	8	7	4	5	3	3	2	3	1	3	2	1		0	1	1	0	320
	Non-squamous	21	11	13	9	9	6	5	4	5	1	2	2	3	1	2	2	1		0	1	1	0	255
	Squamous	12	5	3	11	5	14	12	3	5	12	8	2	5		3		2						65
Atezolizumab	Lung cancer	14	25	15	9	9	7	3	3	2	3		3		2	2			2	2				59
Durvalumab	Lung cancer	6				3	9		3	14	6	6	17	3	6	6	11		6	3		3		35
Nivolumab	Lung cancer	20	27	13	13	7		7			7							7						15
Chemotherapy + immunotherapy																								
Karboplatin+Pembrolizumab+Pemetreksed	Lung cancer	14	11	14	53	2	3	1	0		1													264
Pembrolizumab+Pemetreksed	Lung cancer	20	9	15	10	8	7	3	7	5	3	2	6		1	1	1	1	1			1		163

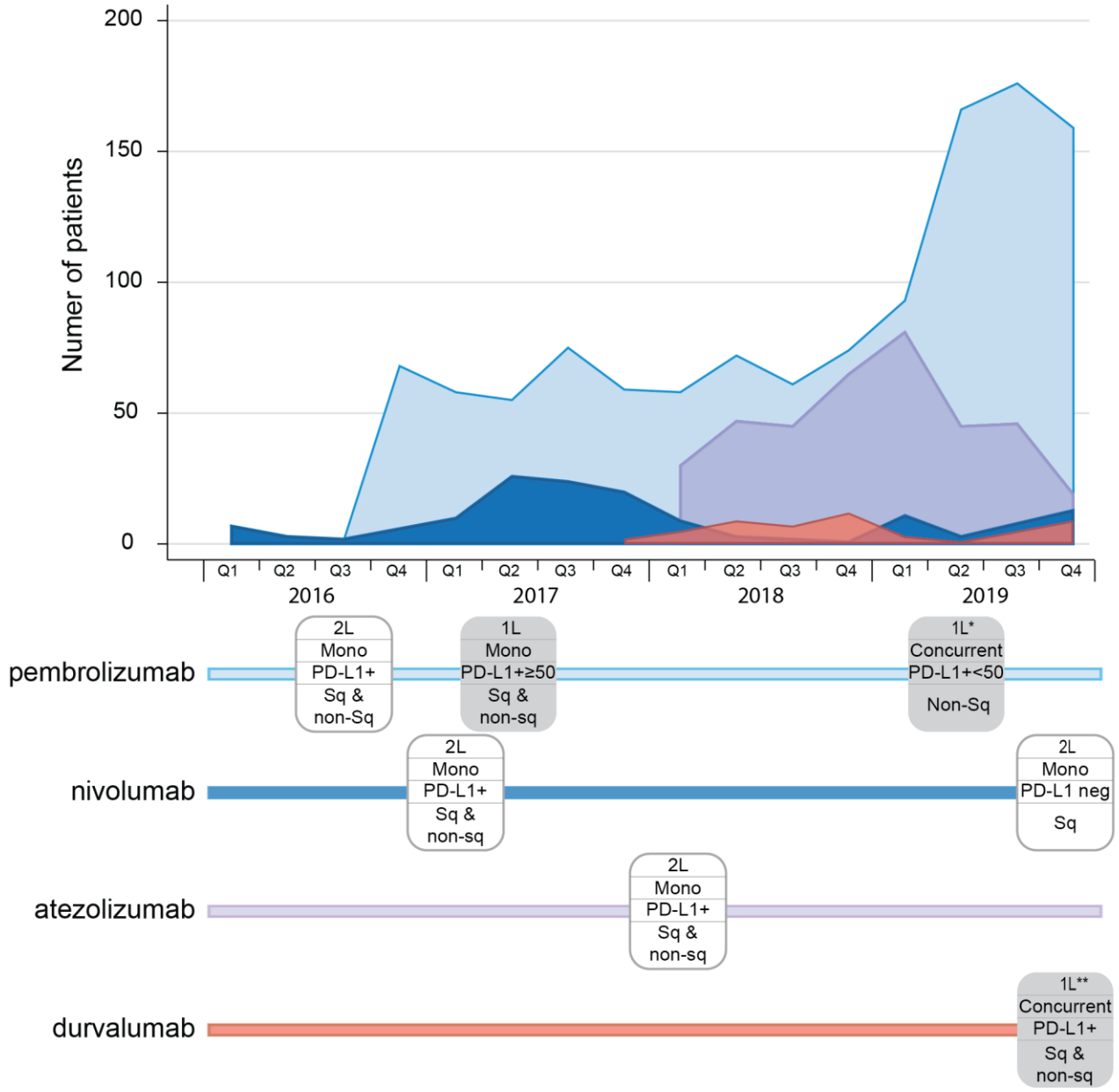
Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 6.5, figure 6.14.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source
- Basis registry (Cancer Registry)
- Cancer medication management systems (Hospitals)

Inclusion
- Cancer in lung and trachea
- Year of diagnosis: 2019
- Treated in South-Eastern-, Western- and Central Norway Regional Health Trusts in the period 01.01.2019-31.08.2020

Comments
- Patients may contribute to more than one group
- ”0”= <0,5 %

HTA approvals and use of immunotherapy



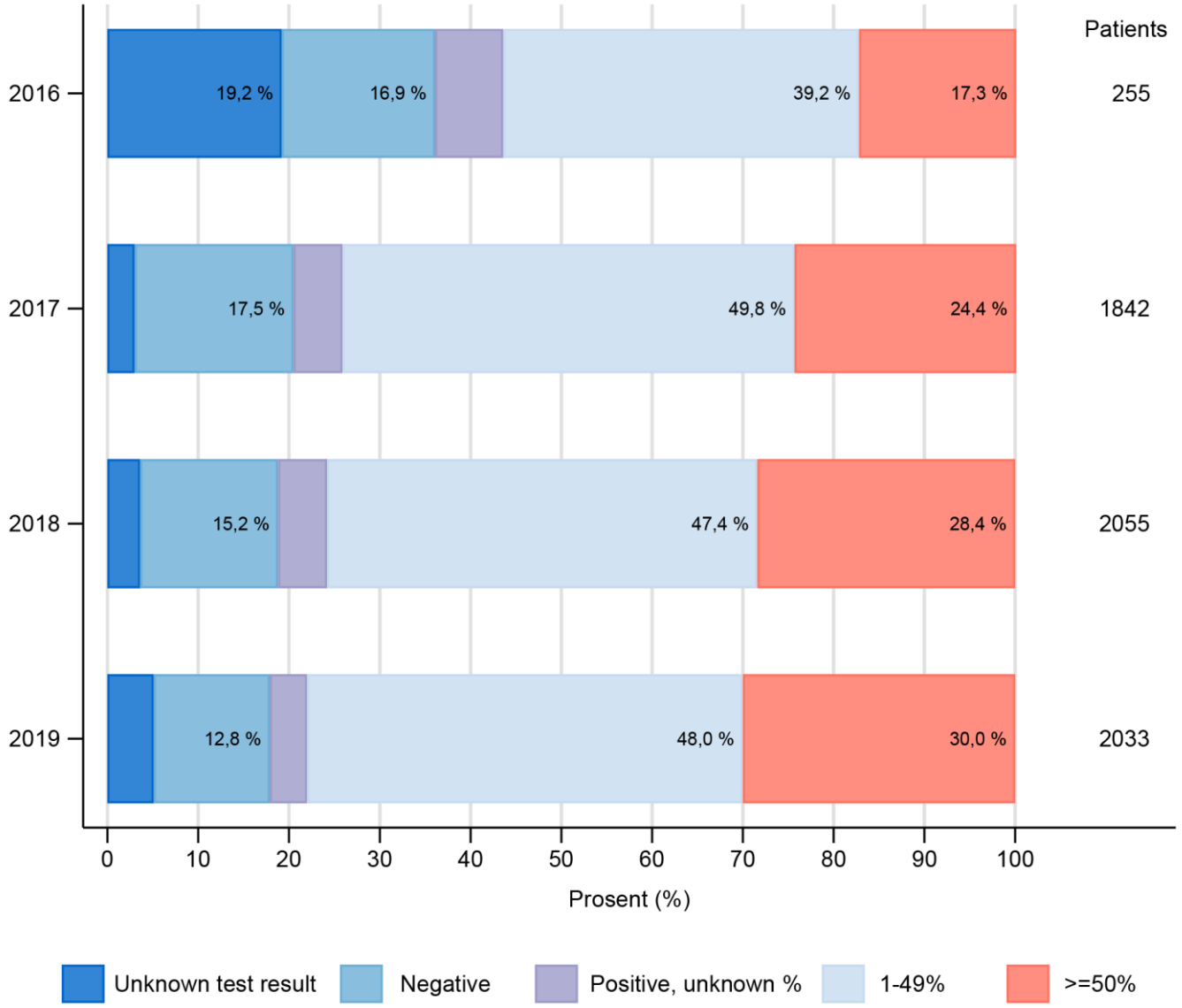
Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 7.3.1, figure 7.1.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Data source
- Pathology notifications
- Cancer medication management systems (Hospitals)

Inclusion
- Cancer in lung and trachea
- Diagnostic period 1953-2019
- Treated in South-Eastern-, Western- and Central Norway Regional Health Trusts in the period 01.01.2016-31.12.2019

Comments
- Number of patients starting treatment per quarter
- One count per patient
- HTA approvals for NSCLC
- *in combination with pemetreksed og platinum based chemotherapy **locally advanced unresectable, with disease not progressed after platinum/based chemoradiation therapy

PD-L1 positivity per year



Data source

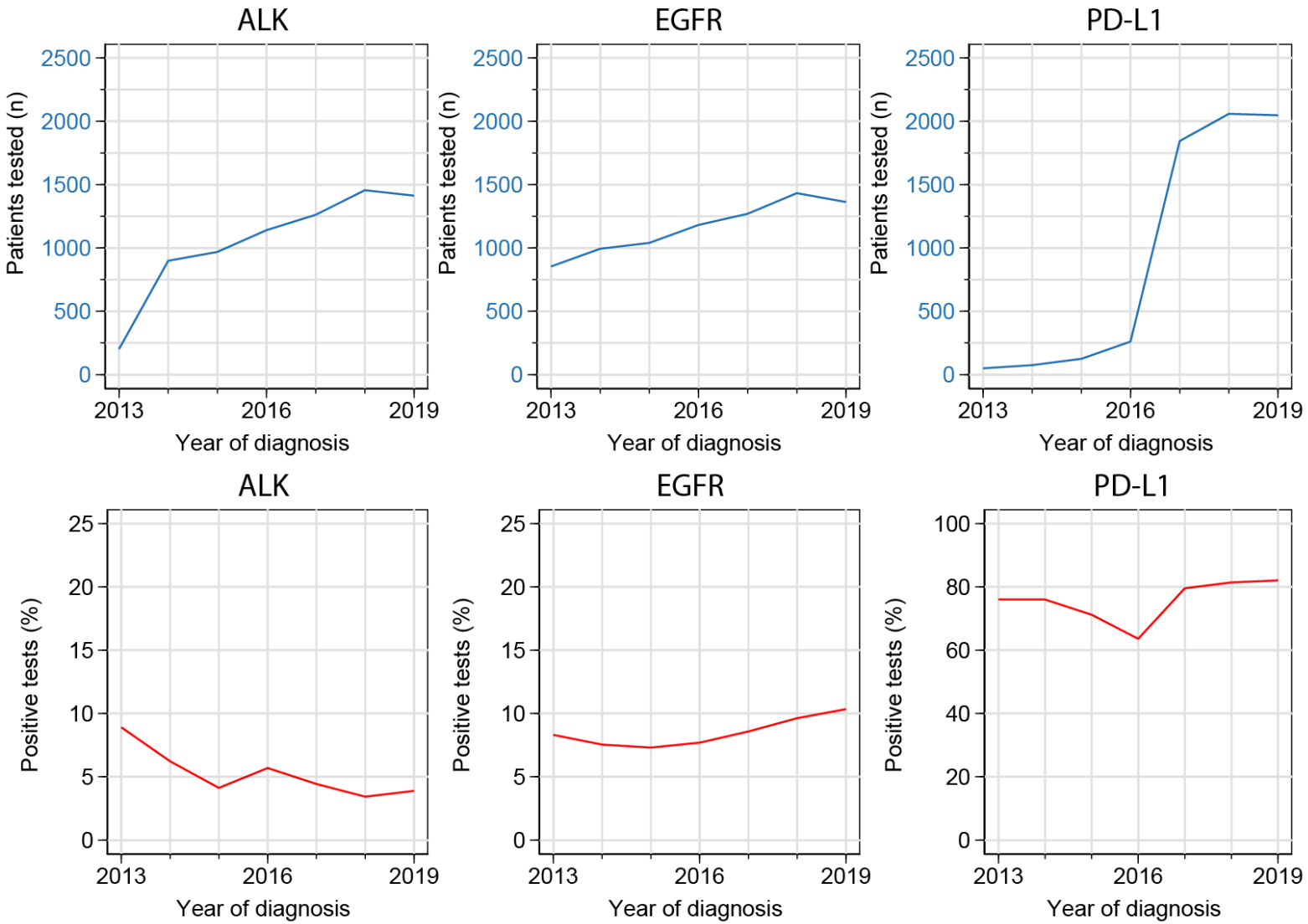
- Quality registry for lung cancer (Cancer Registry): Pathology notification

Inclusion

- NSCLC in lung and trachea

Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 5.3, figure 5.6.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Number of tests and test-positivity of ALK, EGFR, and PD-L1 for 2013-2019 in Norway



Reference: INSPIRE:lungekreft. Evaluering av pilotprosjekt. Oslo: Kreftregisteret, 2021. Chapter 5.3, figure 5.5.
https://www.kreftregisteret.no/globalassets/publikasjoner-og-rapporter/inspire/inspire_lungekreft_evaluering-av-pilotprosjekt.pdf

Datasource

- Quality registry for lung cancer (Cancer Registry): Pathology notification

Inclusion

- Diagnostic period 2013–2019
- NSCLC in lung and trachea
- Test period: 2013–2020

Comments

- Mutations for ALK and EGFR tested only in adenocarcinomas and NSCLC-UNS
- PD-L1 Positivity measured in all NSCLC
- PD-L1 positive tests includes all ≥1 %