

Munich Cancer Registry



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ICD-10 C91.0, C92.0-C94.4: Acute leukaemias

Survival

Year of diagnosis	1988-1997	1998-2019
Patients	470	4,477
Diseases	470	4,483
Cases evaluated	433	2,651
Creation date	01/28/2021	
Database export	01/07/2021	
Population	4.92 m	



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<https://www.tumorregister-muenchen.de/en>

<https://www.tumorregister-muenchen.de/en/facts/surv/sC914aE-ICD-10-C91.0-C92.0-C94.4-Acute-leukaemias-survival.pdf>

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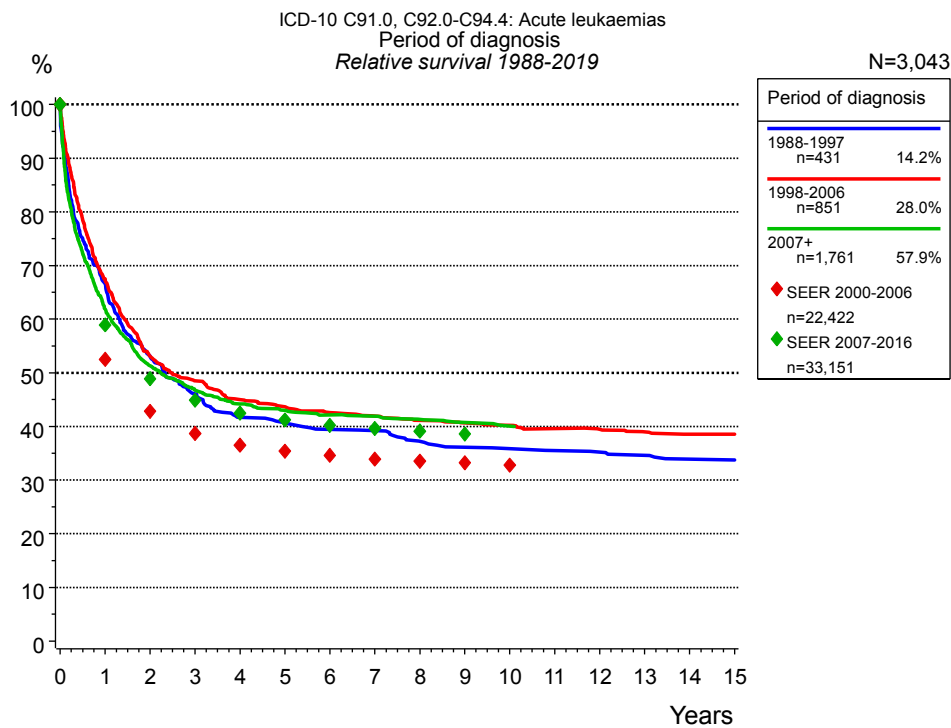


Figure 1a. Relative survival of patients with acute leukaemias by period of diagnosis. Included in the evaluation are 3,043 cases diagnosed between 1988 and 2019.

The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 2000 to 2016, and are represented by colored diamonds in order to facilitate comparisons between MCR and SEER.

The presented survival curves are derived from clinical records with valid follow-up informations, which means that death certificate cases (DCO) cases are omitted from the analysis. With this one restriction, the MCR has provided population-based statistics since 1998, collecting data on all cancer cases in the region of southern Bavaria. Historical data of previous time periods can be heavily selected, therefore, univariate survival comparisons of the presented time periods must be carefully considered. Nonetheless, all calculable survival curves are depicted to facilitate the comparison of long time follow-up analyses of relative survival between particular cancers.

Years	Period of diagnosis					
	1988-1997 n=431		1998-2006 n=851		2007+ n=1,761	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	65.7	66.6	66.4	67.4	60.6	61.8
2	52.3	53.1	51.9	53.1	49.8	51.3
3	45.1	46.0	47.1	48.5	45.0	46.7
4	40.5	41.7	43.6	45.0	42.3	44.2
5	39.5	40.6	42.1	43.6	40.9	43.0
6	38.2	39.4	40.8	42.6	39.9	42.1
7	37.9	39.2	40.0	41.9	39.4	41.9
8	35.7	37.2	39.1	41.2	38.6	41.3
9	34.6	36.1	38.4	40.6	37.9	40.7
10	34.4	35.9	37.8	40.2	37.2	40.0
11	33.8	35.5	37.0	39.6		
12	33.5	35.2	36.8	39.5		
13	32.9	34.6	36.1	39.0		
14	32.0	33.9	35.4	38.5		
15	31.7	33.7	35.4	38.6		
Median	2.3		2.3		2.0	

Table 1b. Observed (obs.) and relative (rel.) survival of patients with acute leukaemias by period of diagnosis for period 1988-2019 (N=3,043).

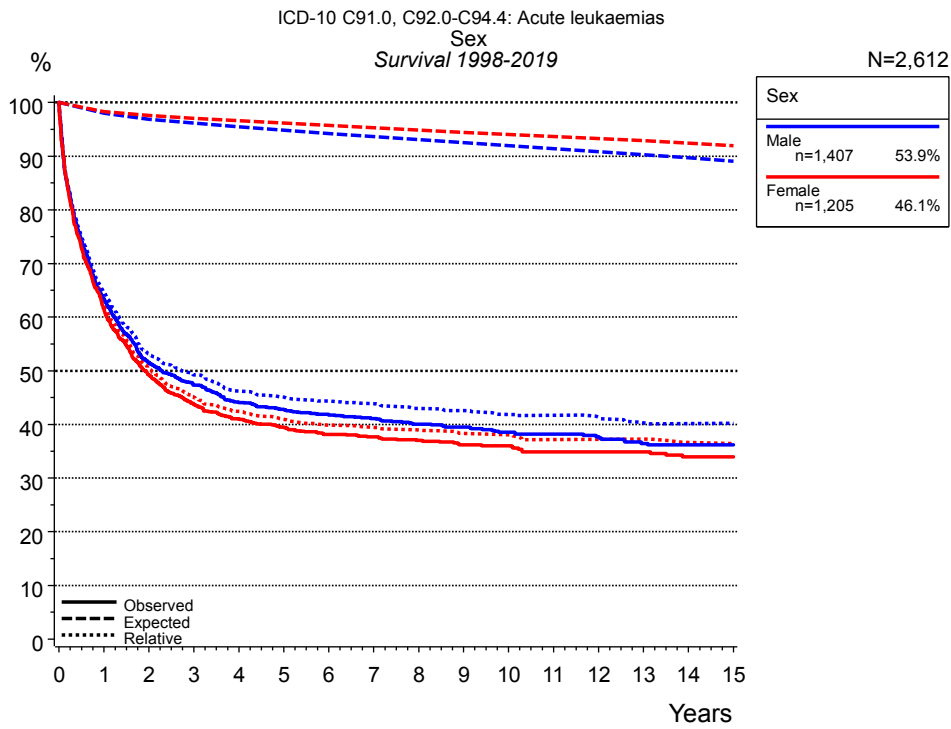


Figure 2a. Survival of patients with acute leukaemias by sex. Included in the evaluation are 2,612 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=1,407		Female n=1,205	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	63.3	64.6	61.5	62.5
2	51.6	53.1	49.2	50.4
3	47.4	49.2	43.8	45.0
4	44.1	46.2	41.1	42.4
5	42.8	45.1	39.5	41.0
6	41.8	44.3	38.2	39.8
7	41.1	43.9	37.7	39.5
8	40.0	43.0	37.0	39.0
9	39.5	42.6	36.2	38.3
10	38.6	41.8	36.0	38.1
11	38.2	41.7	34.9	37.2
12	37.7	41.3	34.9	37.2
13	36.5	40.3	34.9	37.3
14	36.2	40.1	33.9	36.6
15	36.2	40.2	33.9	36.4
Median	2.3		1.9	

Table 2b. Observed (obs.) and relative (rel.) survival of patients with acute leukaemias by sex for period 1998-2019 (N=2,612).

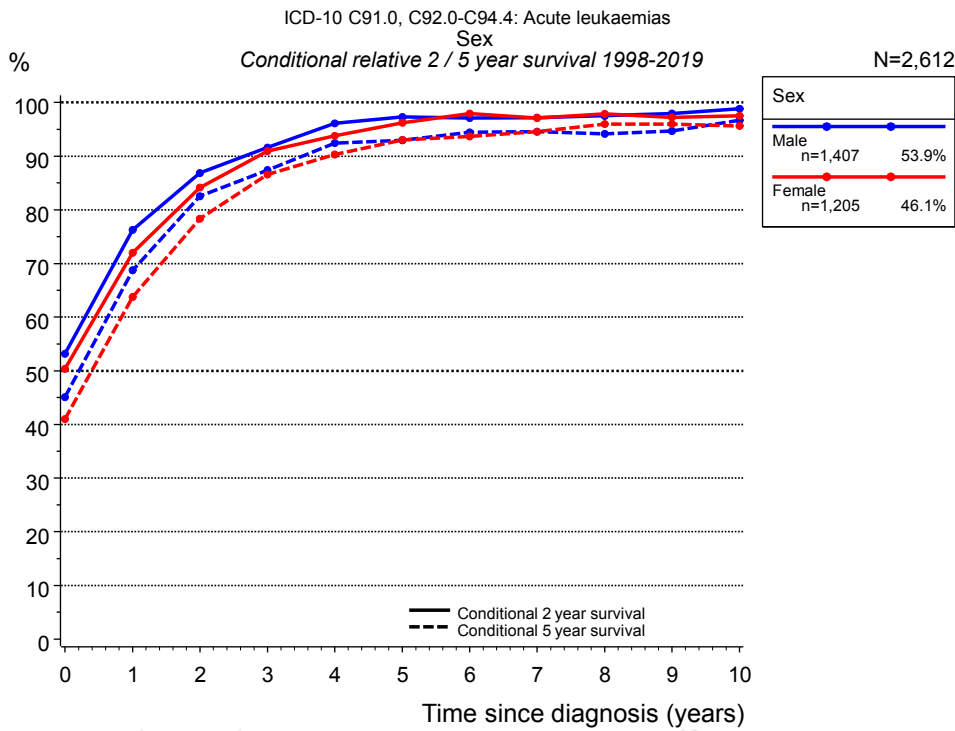


Figure 2c. Conditional relative 2 / 5-year survival of patients with acute leukaemias by sex. For 2,612 of 2,612 cases diagnosed between 1998 and 2019 valid data could be obtained for this item.

Years	Sex					
	n	Male		n	Female	
		Cond. surv. % 2 yrs	5 yrs		Cond. surv. % 2 yrs	5 yrs
0	1,407	53.1	45.1	1,205	50.4	41.0
1	841	76.3	68.7	702	72.0	63.7
2	657	86.8	82.5	535	84.1	78.3
3	567	91.6	87.4	446	90.9	86.6
4	500	96.1	92.4	399	93.8	90.3
5	459	97.3	93.0	364	96.2	93.0
6	414	97.1	94.4	334	97.9	93.7
7	364	97.1	94.6	298	97.1	94.6
8	310	97.5	94.1	255	97.9	96.0
9	267	97.9	94.7	206	97.2	96.0
10	233	98.8	96.7	170	97.5	95.7

Table 2d. Conditional relative 2 / 5-year survival of patients with acute leukaemias by sex for period 1998-2019 (N=2,612).

Conditional relative survival rates refer to the relative survival probability, in this case for 2 and 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 2a). The results illustrate to what extent the cancer induced mortality of particular subgroups declines in the subsequent years after detection of the malignancy. For instance, according to the presented survival statistics, patients in the subgroup sex="Male", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 91.6% (n=567).

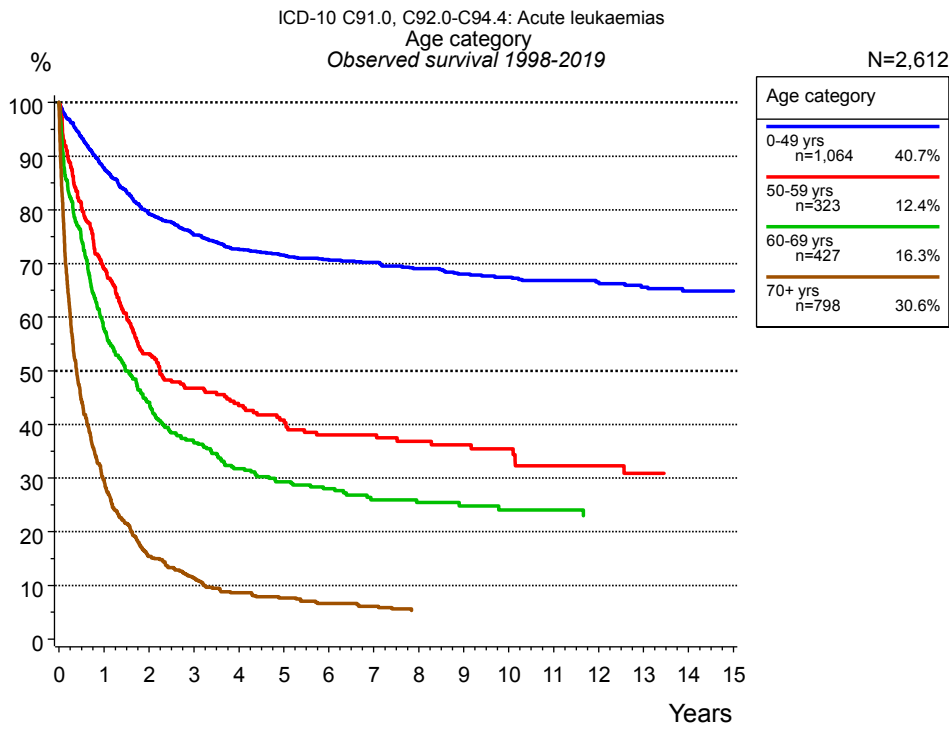


Figure 3a. Observed survival of patients with acute leukaemias by age category. Included in the evaluation are 2,612 cases diagnosed between 1998 and 2019.

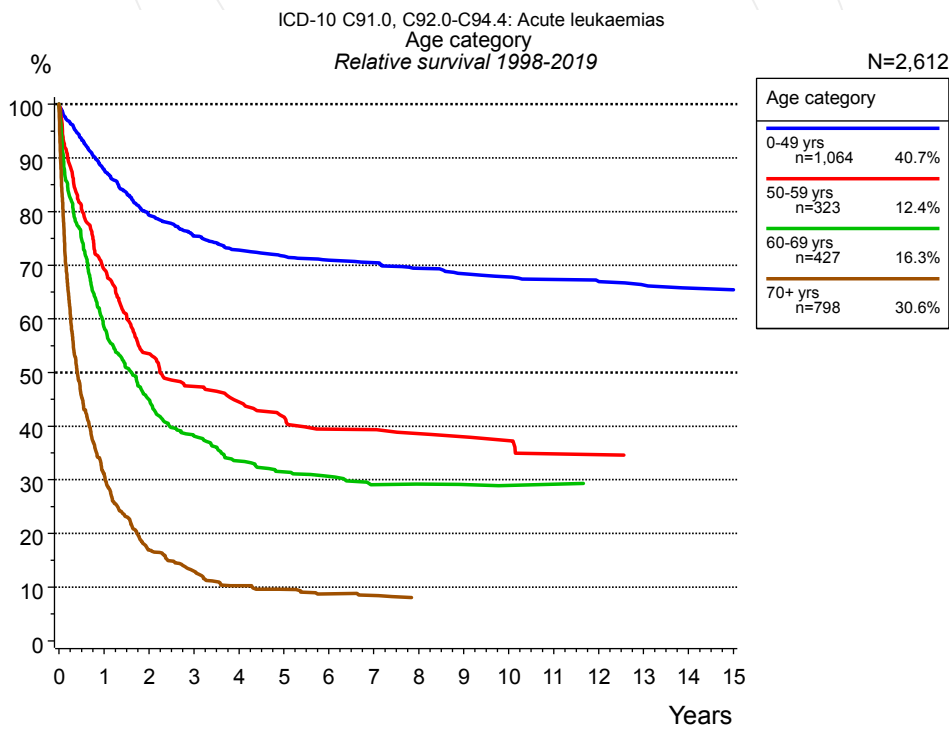


Figure 3b. Relative survival of patients with acute leukaemias by age category. Included in the evaluation are 2,612 cases diagnosed between 1998 and 2019.

Years	Age category							
	0-49 yrs n=1,064		50-59 yrs n=323		60-69 yrs n=427		70+ yrs n=798	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.8	87.8	68.8	69.2	57.8	58.5	29.6	31.1
2	79.3	79.3	53.2	53.5	44.1	44.9	15.4	16.9
3	75.3	75.4	46.8	47.4	36.6	38.1	11.4	13.0
4	72.7	72.8	43.5	44.5	31.7	33.5	8.6	10.3
5	71.6	71.7	40.8	41.7	29.3	31.5	7.6	9.6
6	70.6	70.9	38.0	39.4	28.0	30.6	6.6	8.7
7	70.2	70.5	38.0	39.3	25.9	29.1	6.1	8.4
8	69.0	69.4	36.9	38.6	25.4	29.2	5.3	7.9
9	68.0	68.4	36.2	38.0	24.8	29.1		
10	67.4	67.8	35.4	37.3	24.0	29.0		
11	66.8	67.3	32.3	34.8	24.0	29.2		
12	66.5	67.0	32.3	34.7				
13	65.6	66.3	30.9	34.0				
14	64.9	65.7						
15	64.9	65.4						
Median			2.2		1.5		0.4	

Table 3c. Observed (obs.) and relative (rel.) survival of patients with acute leukaemias by age category for period 1998-2019 (N=2,612).

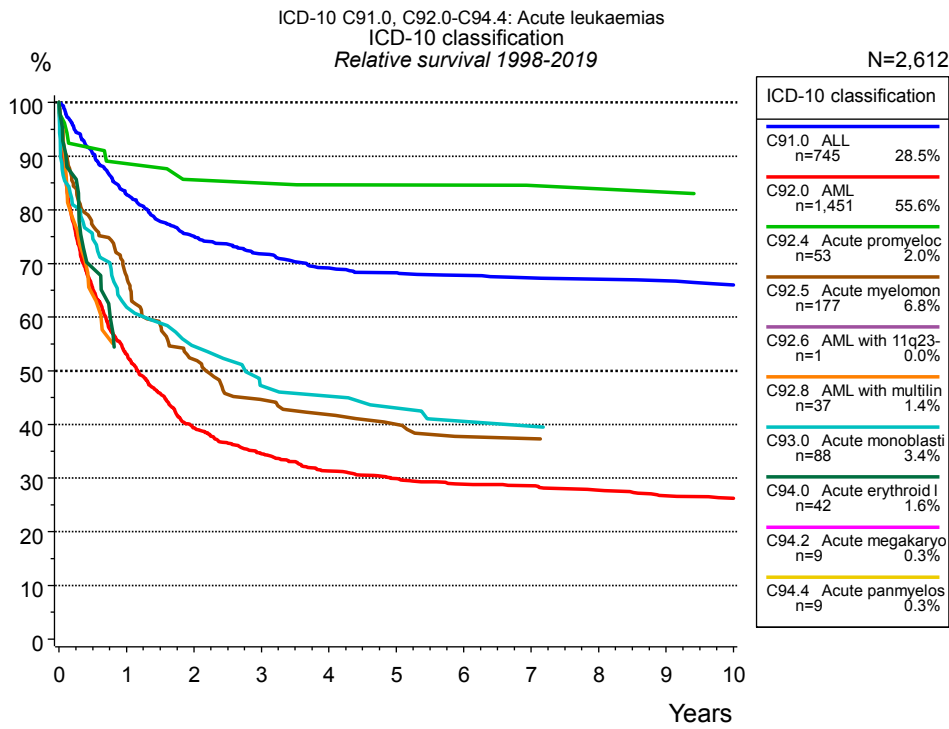


Figure 4a. Relative survival of patients with acute leukaemias by ICD-10 classification. Included in the evaluation are 2,612 cases diagnosed between 1998 and 2019. Subgroups with sample size <20 are omitted from the chart.

Years	ICD-10 classification														
	C91.0 ALL		C92.0 AML		C92.4 Acute promyelocytic leukaemia		C92.5 Acute myelomonocytic leukaemia		C92.8 AML with multilineage dysplasia		C93.0 Acute monoblastic/monocytic leuk		C94.0 Acute erythroid leukaemia		
	n=745	n=1,451	n=53	n=177	n=37	n=88	n=42	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	82.4	82.8	51.8	53.1	88.4	88.6	67.0	67.7				60.7	61.9		
2	74.7	75.1	37.9	39.4	84.2	85.6	50.9	52.1				53.3	54.6		
3	71.2	71.8	32.9	34.6	84.2	85.0	43.0	44.7				45.7	47.2		
4	68.5	69.1	29.4	31.3	82.0	84.6	40.4	41.9				44.4	45.2		
5	67.5	68.3	27.9	29.9	82.0	84.6	38.3	40.0				41.8	43.1		
6	66.9	67.8	26.6	28.8	82.0	84.6	35.5	37.7				39.1	40.6		
7	66.3	67.3	26.1	28.5	79.2	84.5	35.5	37.4				39.1	39.7		
8	65.9	67.1	25.1	27.7	79.2	83.9	34.6	37.3							
9	65.7	66.8	23.9	26.7	79.2	83.3	34.6	37.4							
10	64.8	66.0	23.4	26.2			34.6	37.4							
Median			1.1				2.1					2.7			

Table 4b. Observed (obs.) and relative (rel.) survival of patients with acute leukaemias by ICD-10 classification for period 1998-2019 (N=2,612).

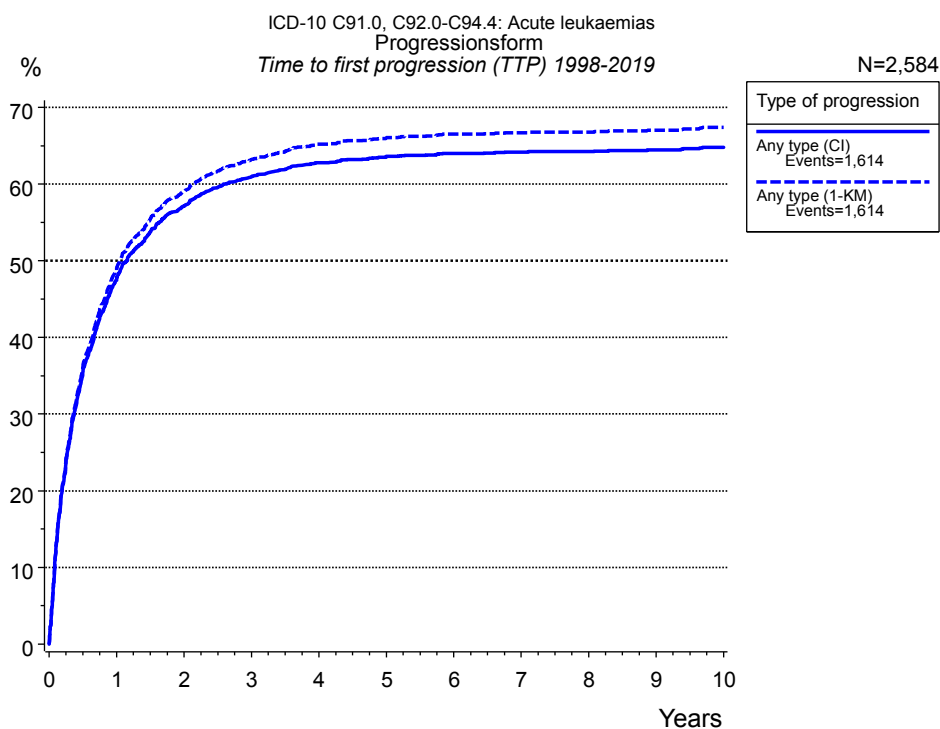


Figure 5a. Time to first progression of 2,584 patients with acute leukaemias diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	Type of progression	
	Any type (CI)	Any type (1-KM)
N	2,584	2,584
Events	1,611	1,611
compet.	160	
Years	%	%
0	0.0	0.0
1	47.7	48.9
2	57.1	59.0
3	60.9	63.2
4	62.8	65.2
5	63.6	66.1
6	64.0	66.5
7	64.2	66.7
8	64.2	66.8
9	64.4	67.0
10	64.8	67.4

Table 5b. Time to first progression of patients with acute leukaemias for period 1998-2019 (N=2,584), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

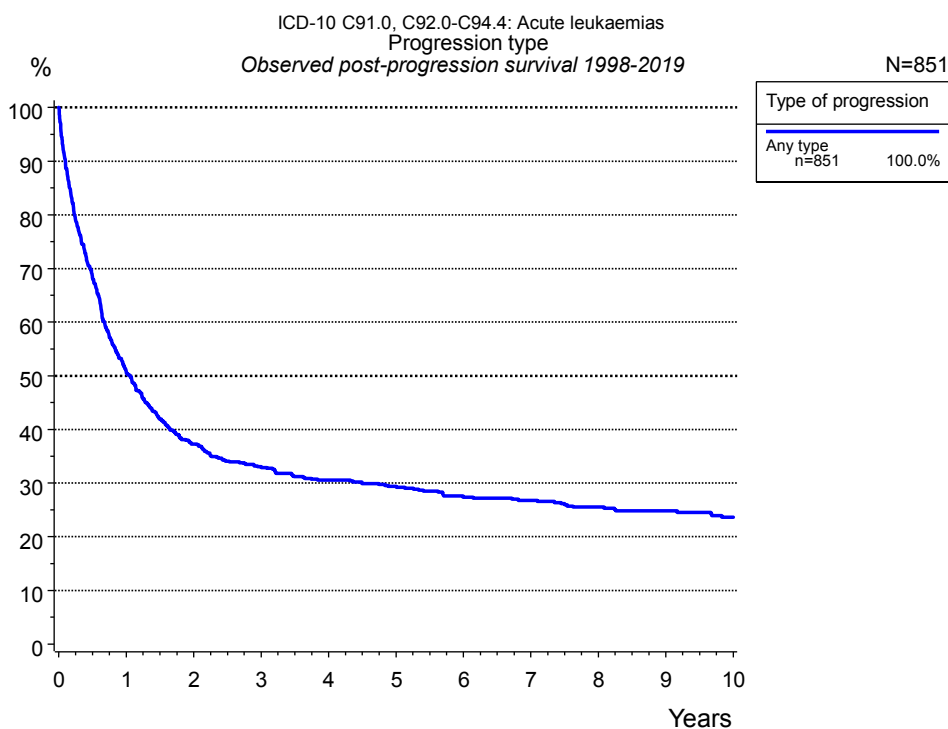


Figure 5c. Observed post-progression survival of 851 patients with acute leukaemias diagnosed between 1998 and 2019. These 851 patients with documented progression events during their course of disease represent 32.9 % of the totally 2,585 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=764, 29.6 %).

Medical record documentation often lacks the linguistic severity to distinguish between local relapse, regional lymph node metastasis and distant spread in solid cancers. Frequently, the statement “not specified” is the only information in registries regarding relapse of the disease. The category “Any type” denotes all cases who suffered from at least one relapse during the course of disease (incl. primary M1-status). Although, the real number of relapsed patients is likely to be much higher. The accumulated percentage of patients with local relapse or distant metastasis exceeds the 100 % value because patients are potentially considered in more than one subgroup.

Type of progression	
Years	Any type n=851 %
0	100.0
1	50.8
2	37.3
3	33.0
4	30.5
5	29.4
6	27.4
7	26.8
8	25.5
9	24.8
10	23.6

Table 5d. Observed post-progression survival of patients with acute leukaemias for period 1998-2019 (N=851).

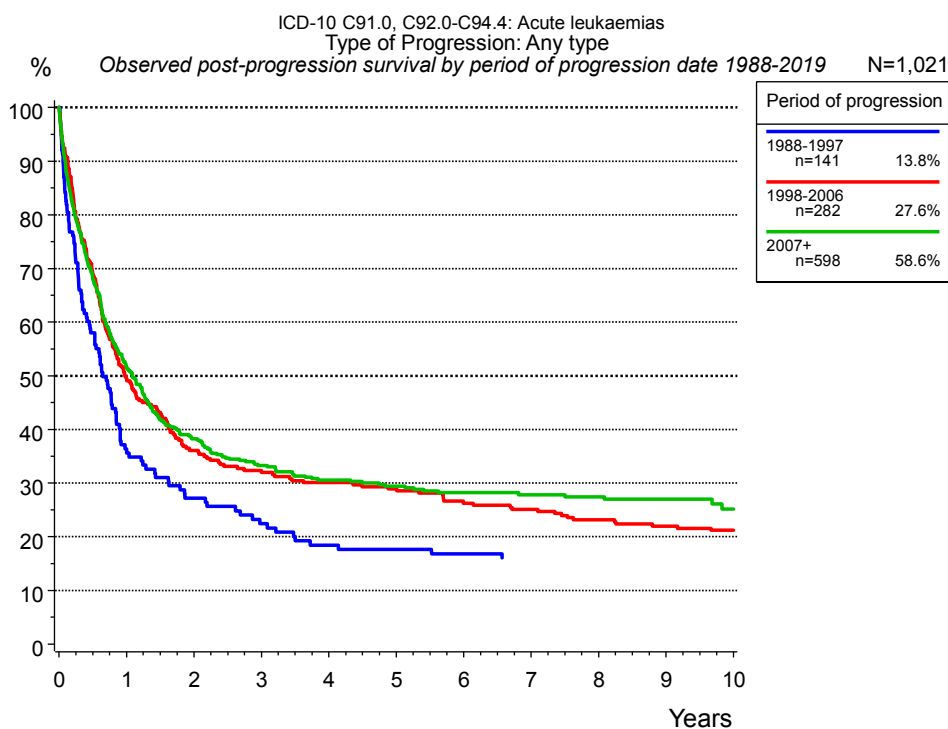


Figure 5e. Observed post-progression (any type) survival of 1,021 patients with acute leukaemias diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=141 %	1998-2006 n=282 %	2007+ n=598 %
0	100.0	100.0	100.0
1	36.4	49.4	51.7
2	27.2	36.1	38.2
3	22.4	32.3	33.3
4	18.4	30.1	30.6
5	17.6	28.9	29.5
6	16.8	26.3	28.2
7	16.0	25.1	27.9
8	16.0	23.1	27.4
9		22.0	27.0
10		21.2	25.2

Table 5f. Observed post-progression (any type) survival of patients with acute leukaemias for period 1988-2019 by period of progression (N=1,021).

Shortcuts

MCR	Munich Cancer Registry, Germany	
NCI	National Cancer Institute, USA	
SEER	Surveillance, Epidemiology, and End Results, USA	
UICC	Union for International Cancer Control, Geneva	
DCO	Death certificate only	Death certificate provides the only notification to the registry.
NA	Not available	
NOS	Not otherwise specified	
OS	Overall/Observed survival	Overall/Observed survival (Kaplan-Meier estimate) Date of entry: diagnosis Event: death from any cause
RS	Relative survival	Survival compared to “general population”, ratio of observed to expected survival (Ederer II method), reflecting cancer specific survival
AS	Assembled survival	Assembled chart of observed, expected, relative survival
CS	Conditional survival	Survival probability under the condition of surviving a given period of time
TTP	Time to progression	Time to first progression / relapse Date of entry: diagnosis Event: (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression
1-KM		1 minus Kaplan-Meier estimator ("inverse" Kaplan-Meier estimator)
CI		Cumulative incidence Death as competing risk (according to Kalbfleisch und Prentice)
PPS	Post-progression survival	Survival since first progression / relapse (Kaplan-Meier estimate) Date of entry (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression Event: death from any cause

Recommended Citation

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