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Improvement of Relative Survival in Elderly Patients with Acute Myeloid Leukemia Emerging from Population-Based Cancer Registries in Switzerland from 2001-2013

Berne, Switzerland

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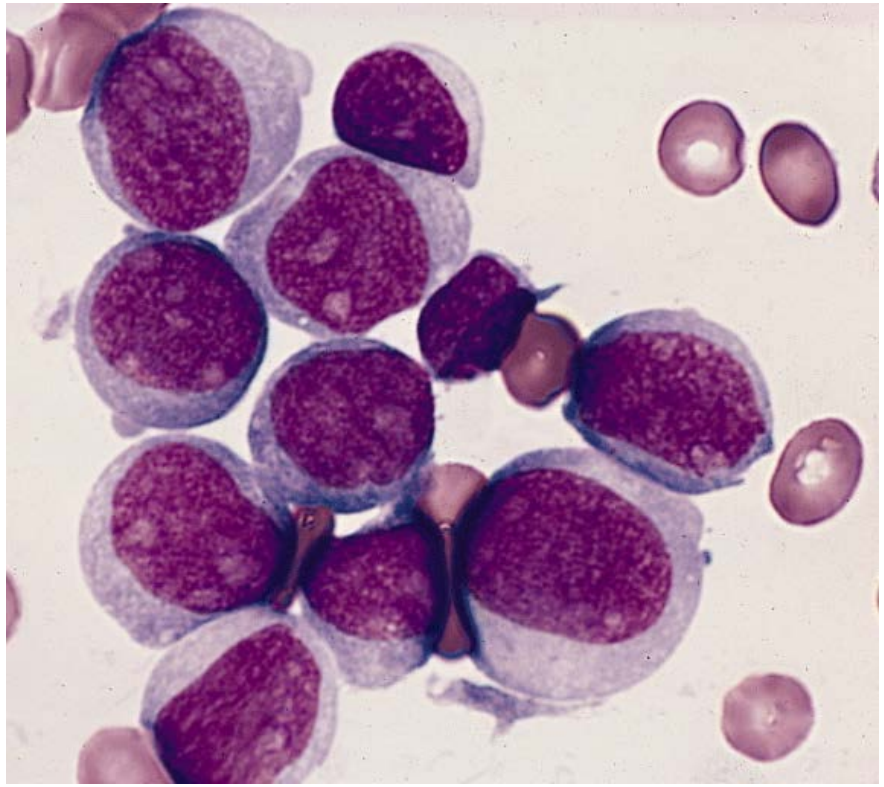
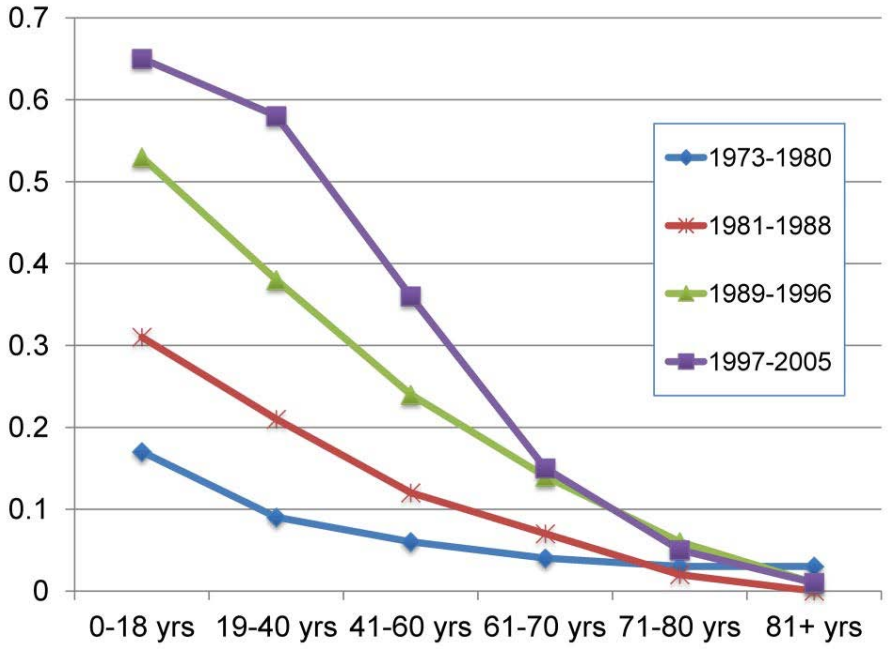
*equal contribution

Introduction

AML:

- 1.5-5.2 new cases per 100,000 person-years
- peak incidence at the age of 75-80 yrs
- Younger patients: Improving survival over time
- Elderly patients (>70yrs): Dismal prognosis without relevant changes over time

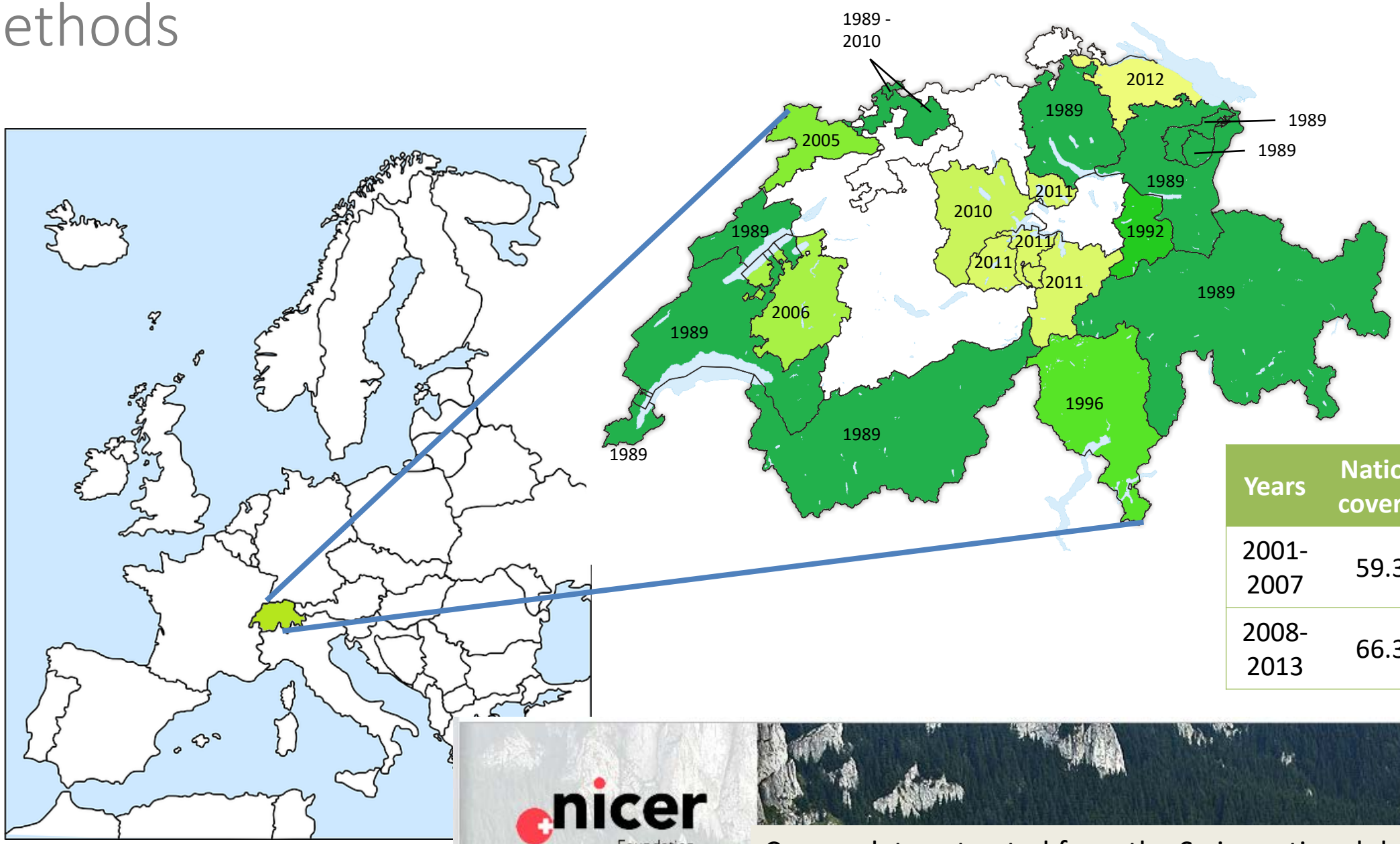




Projected relative 5-year survival in AML according to age and time period (Juliusson, BLOOD, 26 APRIL 2012)

1) Percival ME, Cancer 2015;121:2004-12.
2) Medeiros BC, Annals of hematology 2015;94:1127-38.
3) Juliusson G, Blood 2012;119:3890-9.
4) Dinmohamed AG, Leukemia 2016;30:24-31.
5) Polednak AP, J Registry Manag 2014;41:77-84.
6) McNally RJ, Hematol Oncol 1997;15:173-89.

Methods



Years	National coverage	Nr of cantons
2001-2007	59.3%	15
2008-2013	66.3%	22

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Cancer data extracted from the Swiss national dataset managed by the Foundation National Institute for Cancer Epidemiology and Registration (NICER)

Methods

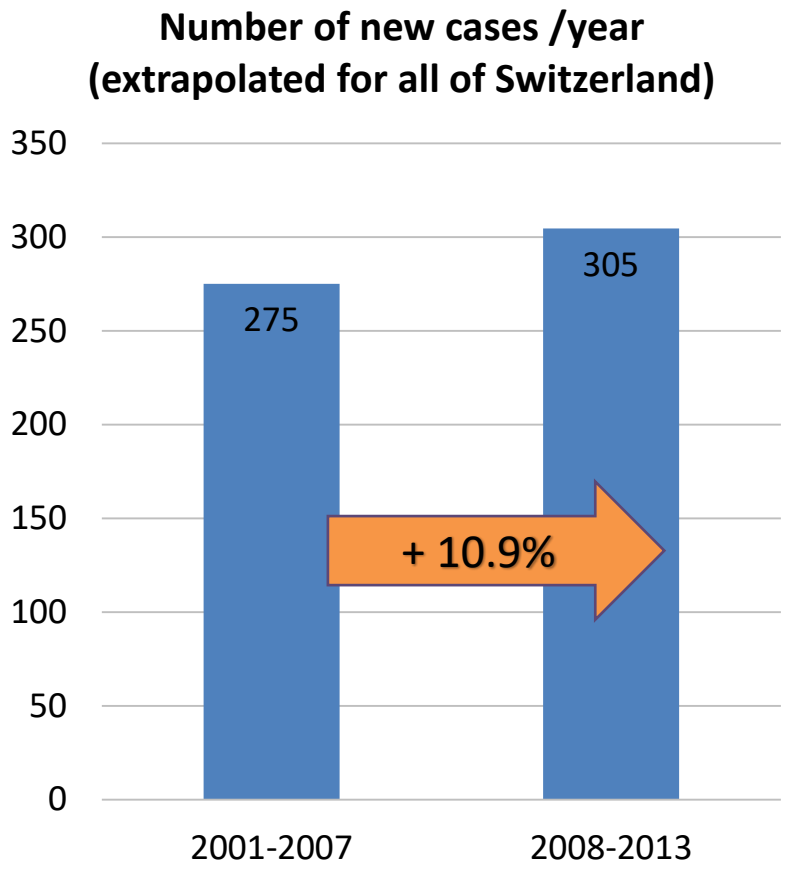
ICD-O Code*	AML Subtype	ICD-O-3 (2000)	ICD-O-3.1 (2011)	AML risk-class**
AML with recurrent genetic abnormalities				
9896	AML with t(8;21)(q22;q22); RUNX1-RUNX1T1	X	X	favorable
9871	AML with inv(16)(p13.1q22)/t(16;16)(p13.1;q22); CBFB-MYH11	X	X	favorable
9866	APL with t(15;17)(q22;q12); PML-RARA	X	X	favorable
9897	AML with t(9;11)(p22;q23); MLLT3-MLL	X	X	adverse
9865	AML with t(6;9)(p23;q34); DEK-NUP214		X	adverse
9869	AML with inv(3)(q21q26.2)/t(3;3)(q21;q26.2); RPN1-EVI1		X	adverse
9911	AML (megakaryoblastic) with t(1;22)(p13;q13); RBM15-MKL1		X	adverse
9895	AML with MDS-related changes	X	X	adverse
9920/ 9987	Therapy-related myeloid neoplasms	X	X	adverse
AML, NOS				
9872	AML with minimal differentiation (FAB M0)	X	X	intermediate
9873	AML without maturation (FAB M1)	X	X	intermediate
9874	AML with maturation (FAB M2)	X	X	Intermediate
9867	Acute myelomonocytic leukaemia (FAB M4)	X	X	Intermediate
9891	Acute monoblastic/monocytic leukaemia (FAB M5)	X	X	Intermediate
9840	Acute erythroid leukaemia (FAB M6)	X	X	adverse
9910	Acute megakaryoblastic leukaemia (FAB M7)	X	X	adverse
9870	Acute basophilic leukaemia	X	X	adverse
9931	Acute panmyelosis with myelofibrosis	X	X	adverse
9930	Myeloid sarcoma	X	X	adverse
AML, non-classifiable				
9860	Myeloid leukaemia (NOT classified according to WHO 2008)	X	X	non-classifiable
9861	Acute myeloid leukaemia (NOT classified according to WHO 2008)	X	X	non-classifiable

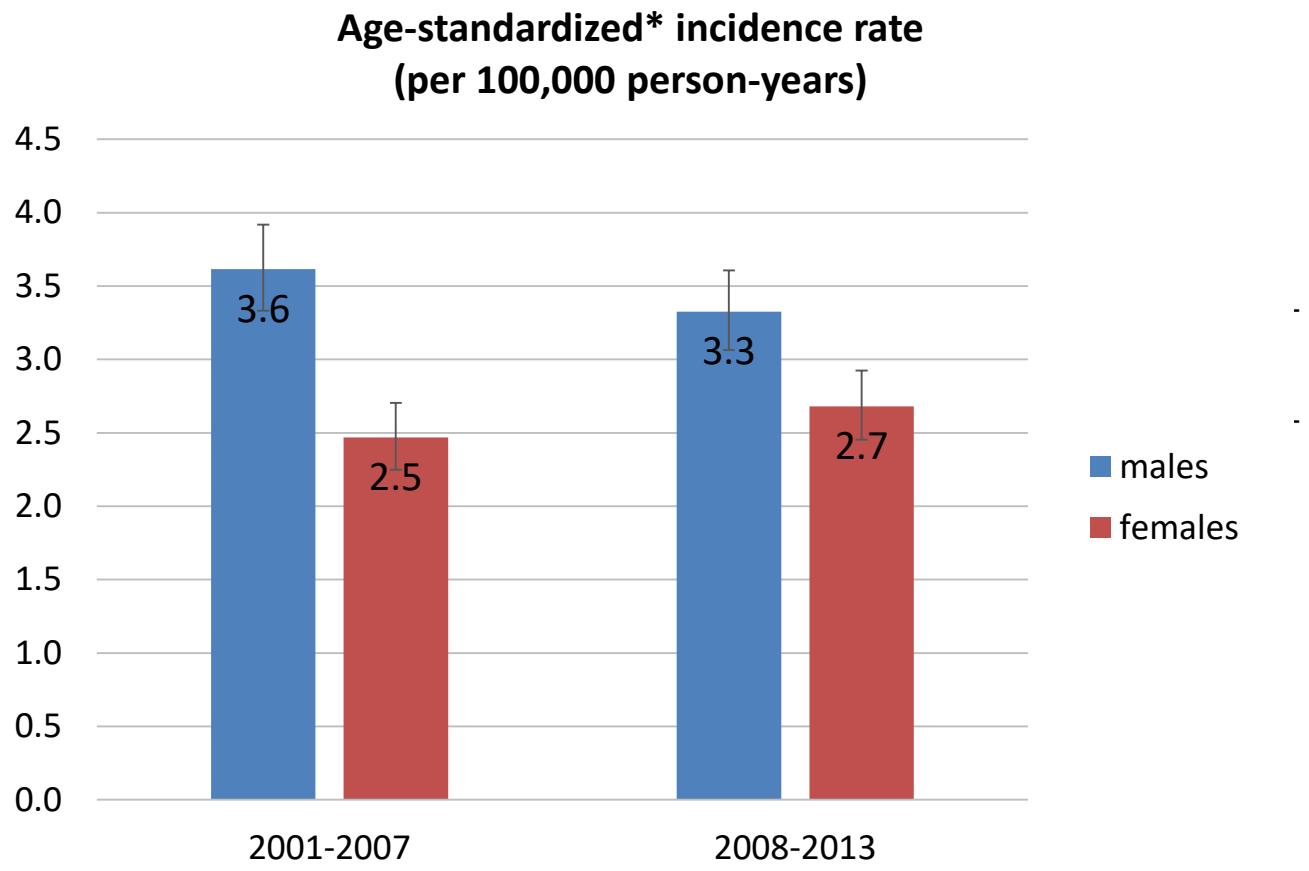
Characteristics of AML cases reported to Swiss cancer registries for 2001–2007 and 2008–2013

	2001-2007		2008-2013	
	n	%	n	%
overall	1,151	100	1,200	100
age and sex				
f*emales*	531	46.1	585	48.8
males	620	53.9	615	51.3

- Median age: 67-68 (Range 0-96y)
- Male/female ratio : 1.1-1.2

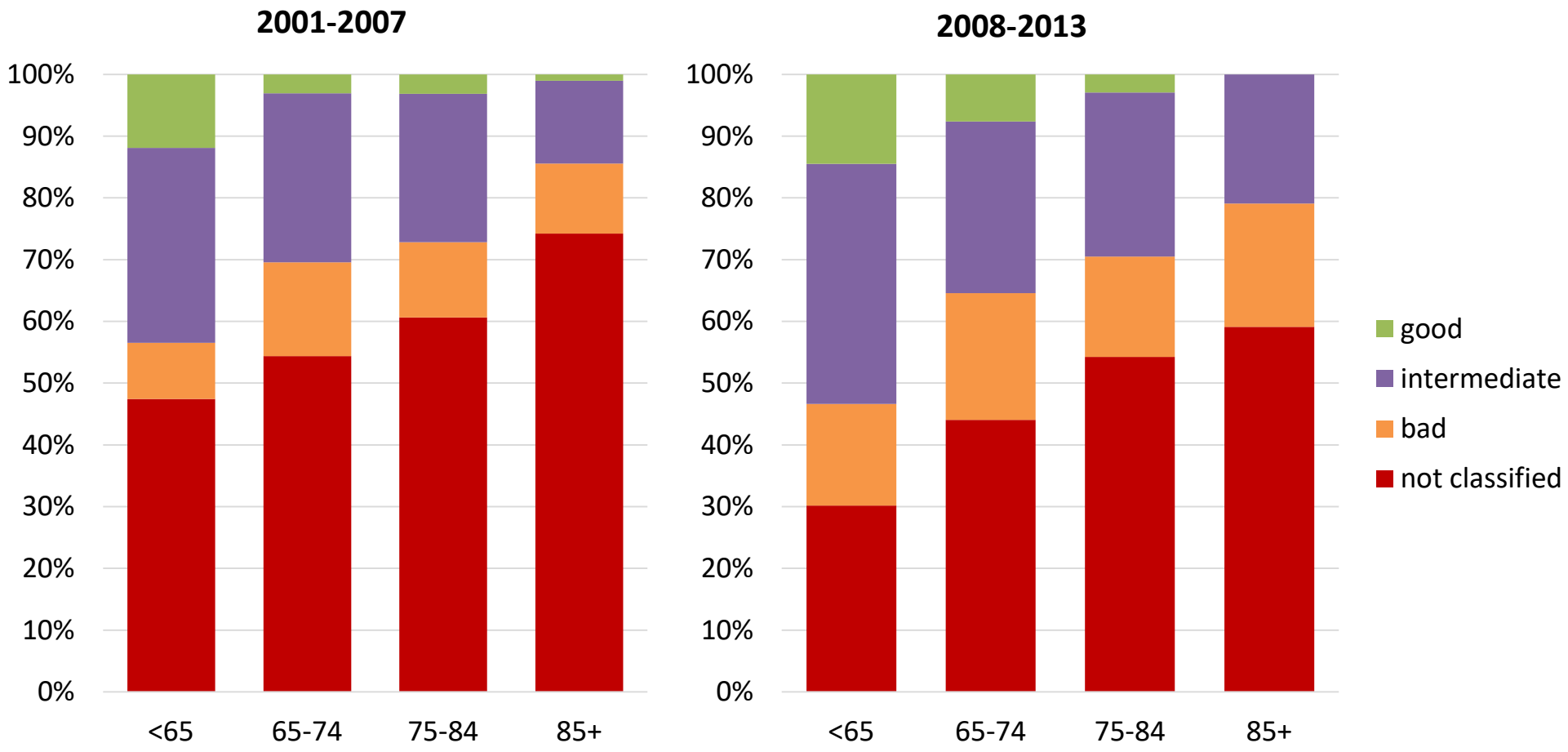
Number of new cases and Incidence Rates



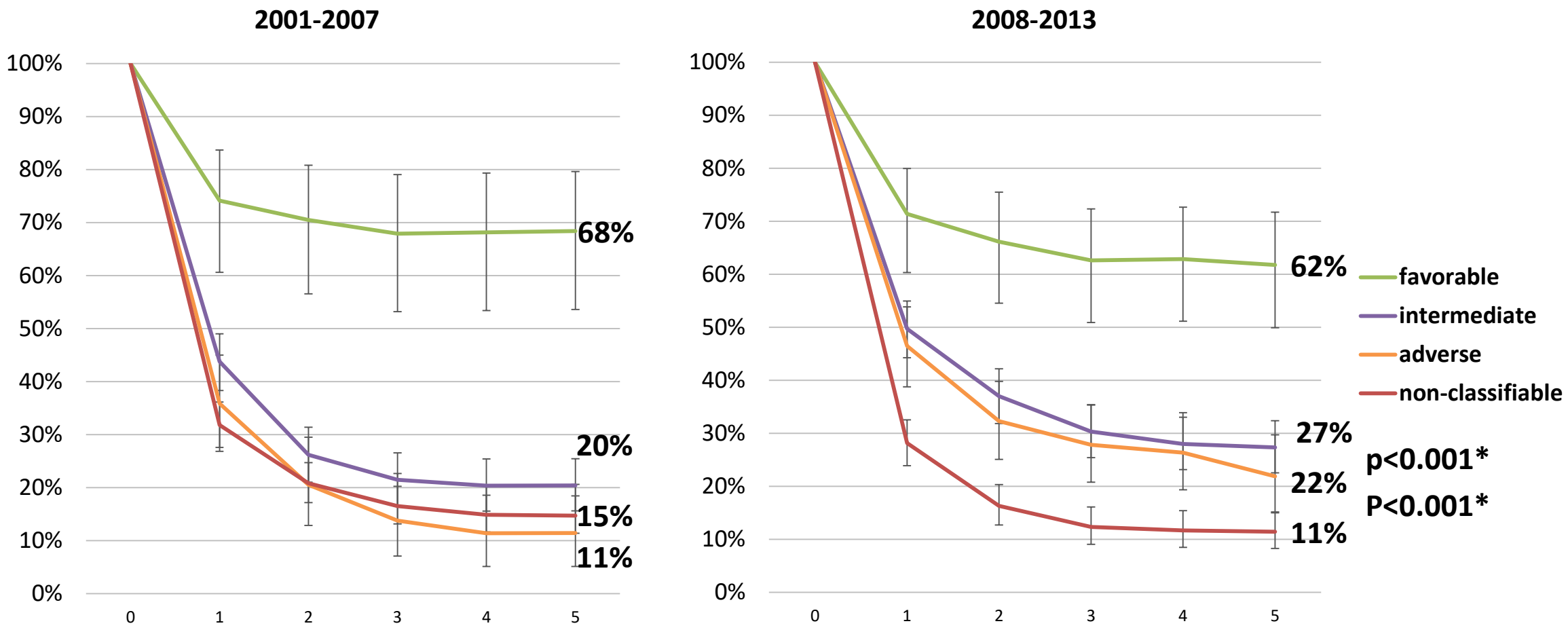


*European Standard 1976

Distribution of Risk Classes according to Age Class

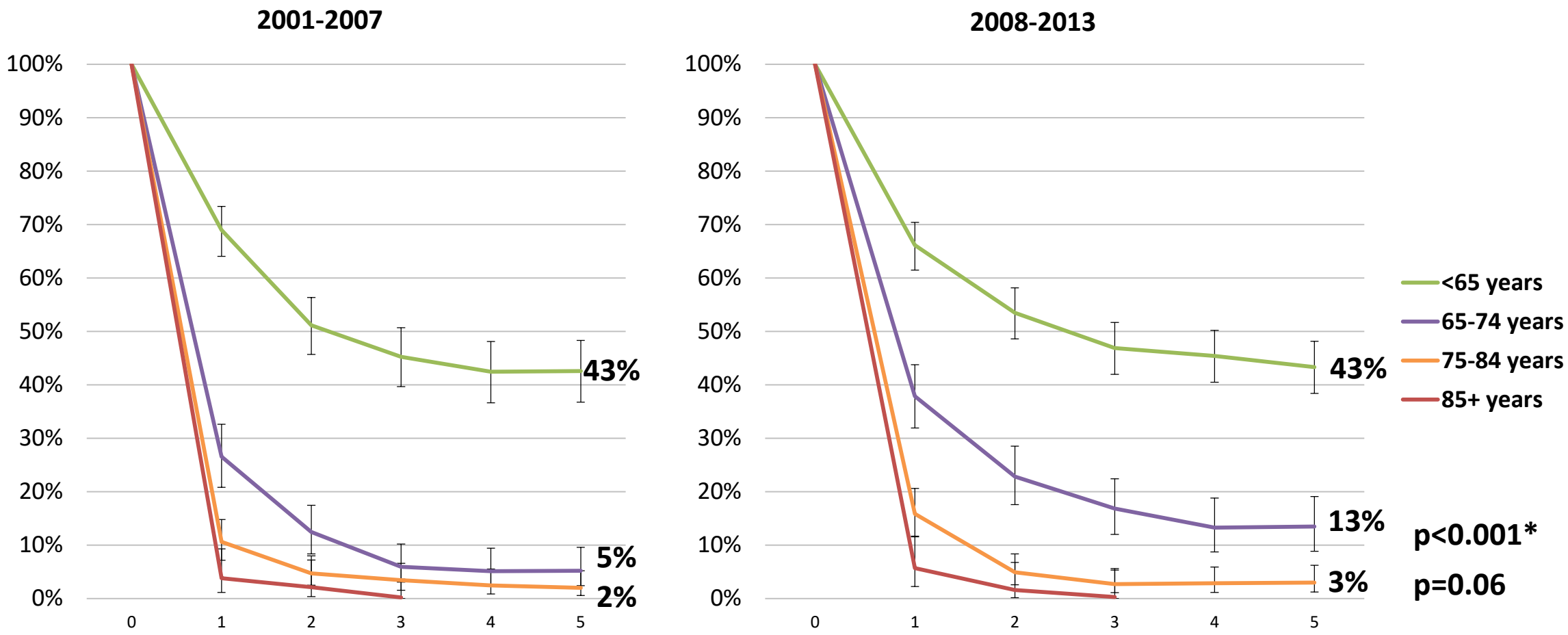


Relative Survival stratified for Risk Class



*Two-sided p-values for relative survival for the two time periods calculated according to Brown et al, Biometrics 1983;39:941-8.

Relative Survival stratified for Age Class



*Two-sided p-values for relative survival for the two time periods calculated according to Brown et al, Biometrics 1983;39:941-8.

Transplanted AML patients age >65 years

	2001-2007		2008-2013		total	
	n	%	n	%	n	%
AML transplanted all ages*	272	43.5	354	56.5	626	100
AML transplanted age ≥65 yrs (range 65-70 yrs)*	6	15.8	32	84.2	38	100
observed AML cases 65-74 yrs**	263	46.5	302	53.5	565	100
estimated AML cases 65-74 yrs (to all of Switzerland)**	444	49.3	456	50.7	900	100

* data from the registry of the *Swiss Blood Stem Cell Transplant Group* (SBST)
** data from CCRs for AML patients aged 65-74 yrs and estimated AML cases extrapolated based on the coverage of 59.3%/66.3% for 2001-2007/2008-2013, respectively

HOVON/SAKK clinical trial activities for elderly AML patients in Switzerland

Trial name	Age	Regimen	Duration	n_0	n_1
HOVON 43/ SAKK 30/01 [1)]	≥61 yrs, fit	Ara-C, Dauno	03/2002-06/2006	101	110
HOVON 81	>60 yrs, fit	Dauno, Bevacizumab	08/2007-12/2007	9	
			01/2008-08/2009	32	133
SAKK 30/07 [2)]	≥65 yrs or unfit	Azacytidin	09/2008-01/2010	45	
HOVON 103	≥66 yrs, fit	Dauno +/- Lenalidomide	01/2012-12/2013	56	
			01/2014-07/2014	9	
HOVON 103	≥66 yrs, fit	Dauno +/- Tos	03/2015- 06/2016	33	
HOVON 103	≥66 yrs, fit	Dauno +/- Sel	06/2017	ongoing	
HOVON 135	≥66 yrs, unfit	Dauno +/- Ibr	10/2016	ongoing	

n_0: Overall included study patients

n_1: Patients included in the two observed periods 2001-2007 and 2008-2013, respectively

1) Lowenberg B et al, The New England journal of medicine 2009;361:1235-48.
2) Passweg JR, et al, Leukemia & lymphoma 2014;55:87-91.

Take-home messages

- Rise of annual AML cases is caused by demographic ageing and not by an increase of age-specific risks.
- AML classification improves over time but diagnostics and reporting are less accurate with increasing age.
- Improvement of relative survival for elderly AML patients, caused by general changes in management.
- Therapeutic nihilism in elderly AML patients is not justifiable.

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