

# HIV epidemic in Greenland

Karin Ladefoged



# HIV control and treatment in Greenland

---

- Managed via Medical Dept. Dronning Ingrid's Hospital since 2003
- HIV-RNA and CD4 analysed every 3-6 months
- HAART free of charge
- Mandatory notification to chief medical officer
- All patients included in the Danish HIV Cohort



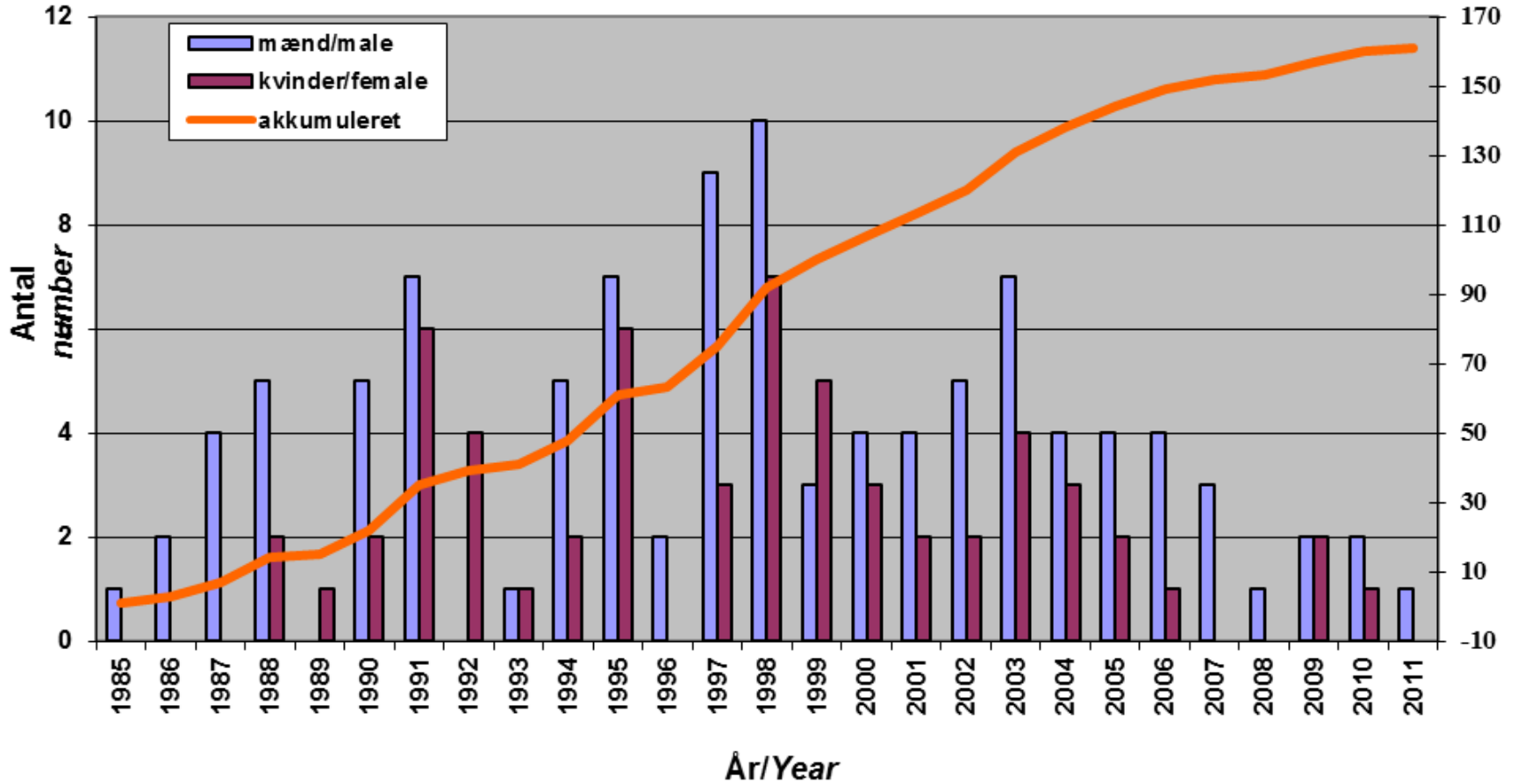
# Data

---

- Chief medical officer's reports
- HIV databases
  - Danish HIV Cohort*
  - InfCareHIV*
- Other publications



# Anmeldte HIV-positive fordelt på køn 1985 - 2011 *Declared HIV-positive by sex*



# HIV in Greenland

---

Cohort 2011: 171 ptt.

## ***Ethnicity***

Inuit:	85%
Caucasian:	9%
Other/unknown:	6%

## ***Mode of transmission***

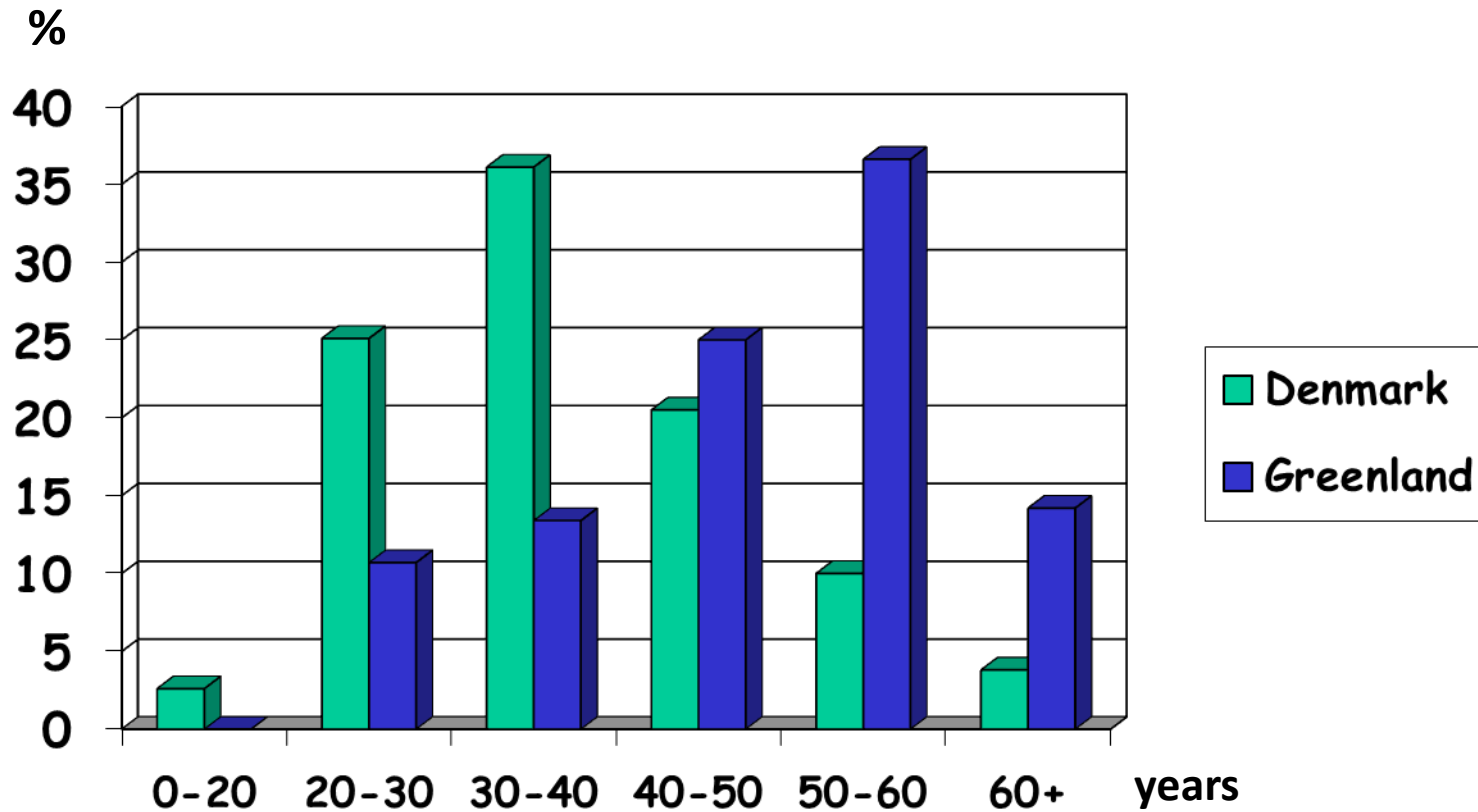
Heterosexual:	74%
MSM:	18%
IV drug abuse:	2%
Unknown:	6%

***Age at diagnosis:*** 46 (20 – 82) years

***Advanced HIV at diagnosis:*** 18%

# Age at HIV diagnosis

---



# Characteristics of HIV virus

---

## **76% same cluster**

94% heterosex  
6% MSM  
58% males  
Median age 52 years

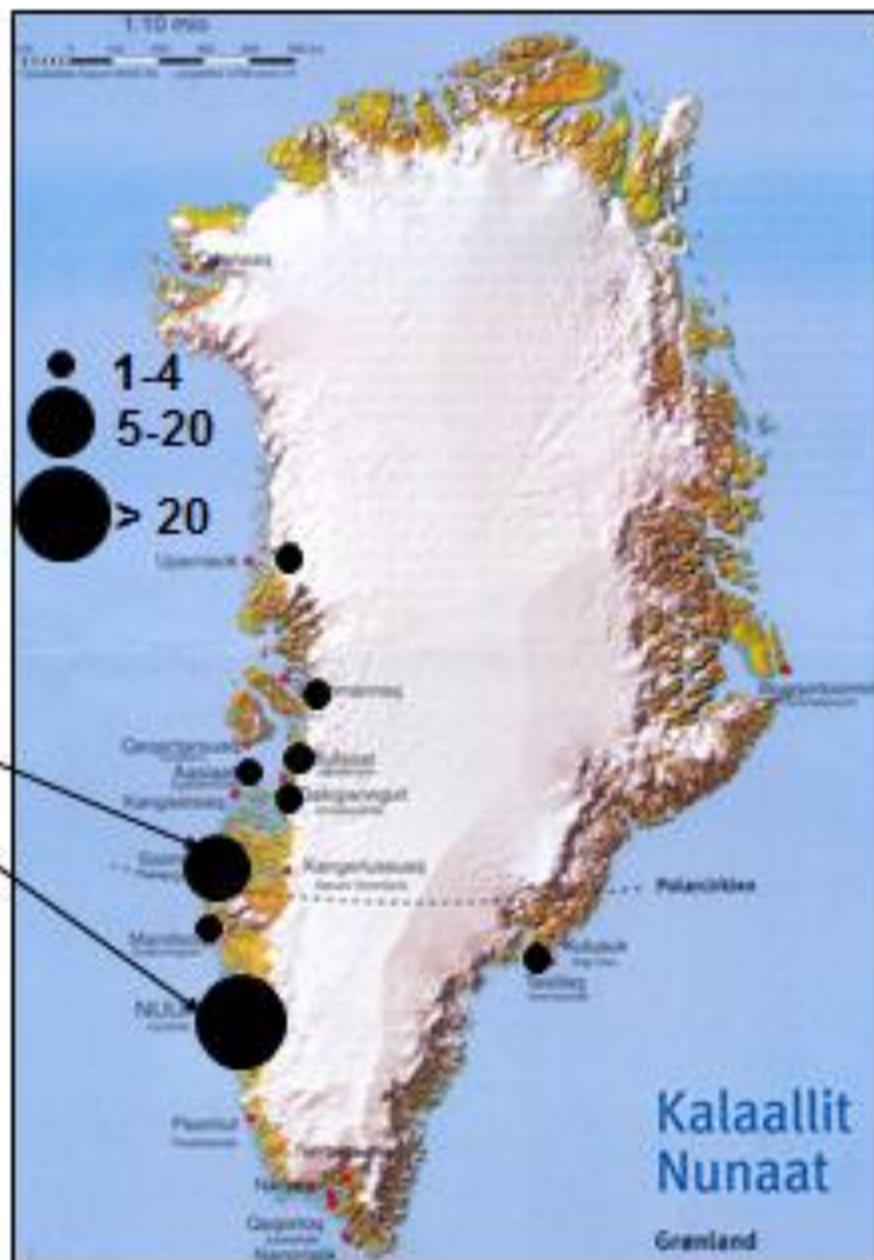
## **24% $\geq$ 8 different clusters**

47% heterosex  
41% MSM  
6% iv  
6% unknown  
76% males  
Median age 42years

Although HIV-1 has been introduced into Greenland at least nine times, only one introduction gave rise to an epidemic

# Geographical distribution of HIV

*Mainly same cluster*





# Geographical distribution of HIV in Greenland

---

	<i>N</i>	<i>Local transmission</i>
<i>Nuuk</i>	89 (52%)	80%
<i>Sisimiut</i>	43 (25%)	93%
<i>Rest of Greenland</i>	39 (23%)	56%



Bjørn-Mortensen Int J Circumpolar Health 2013

# Resistance profiles for 15 among 60 treatment-naive Greenlandic HIV patients with a least one primary resistance mutation

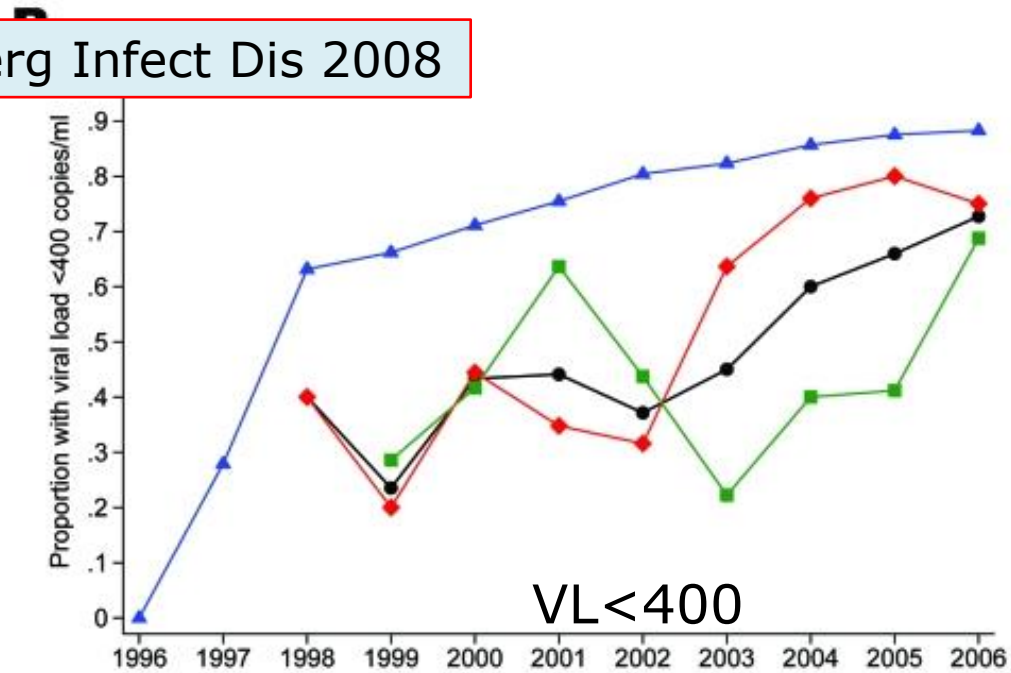
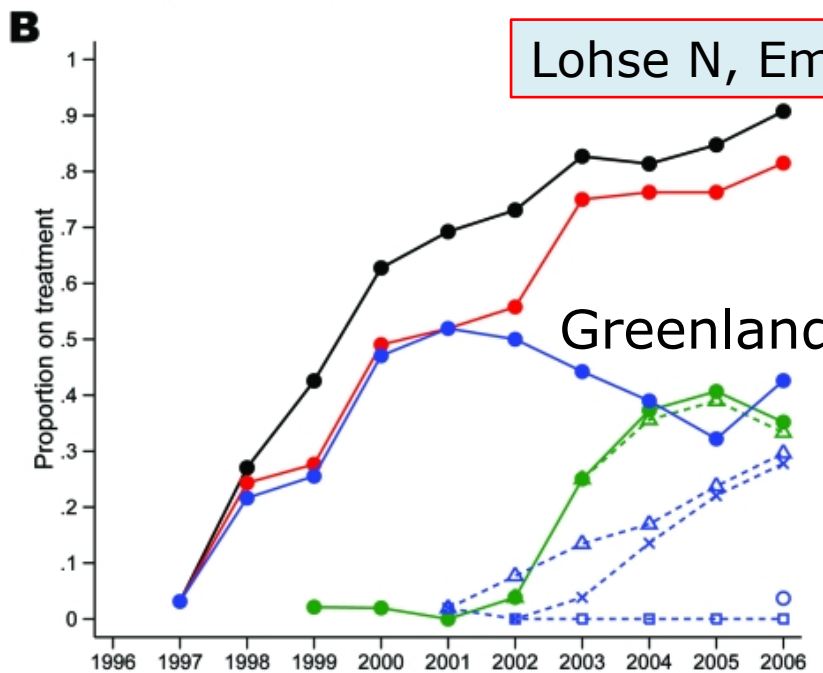
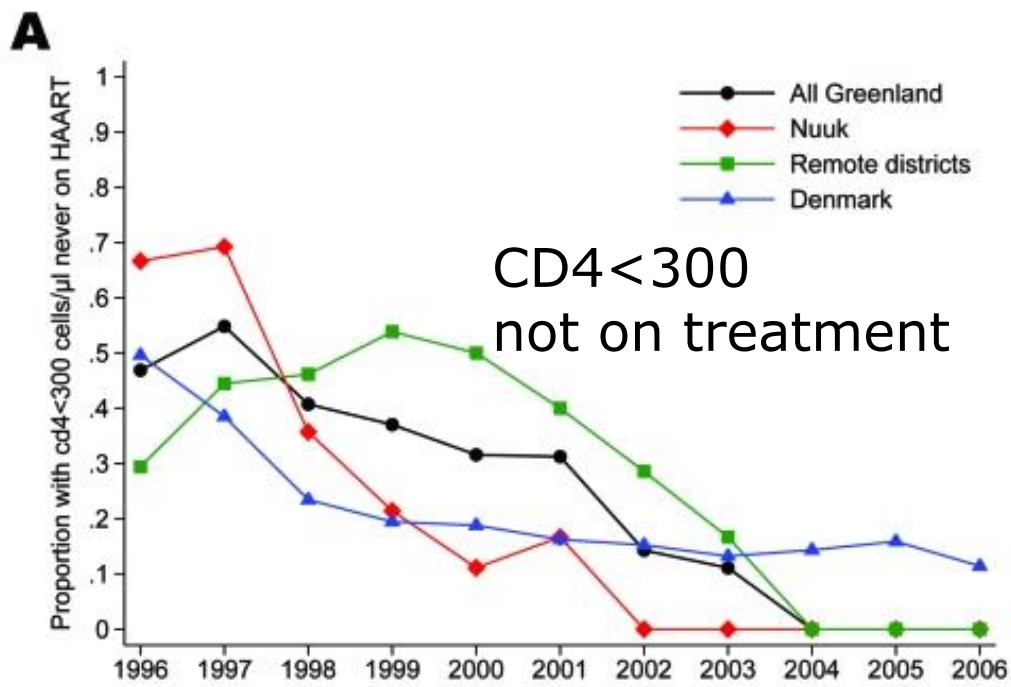
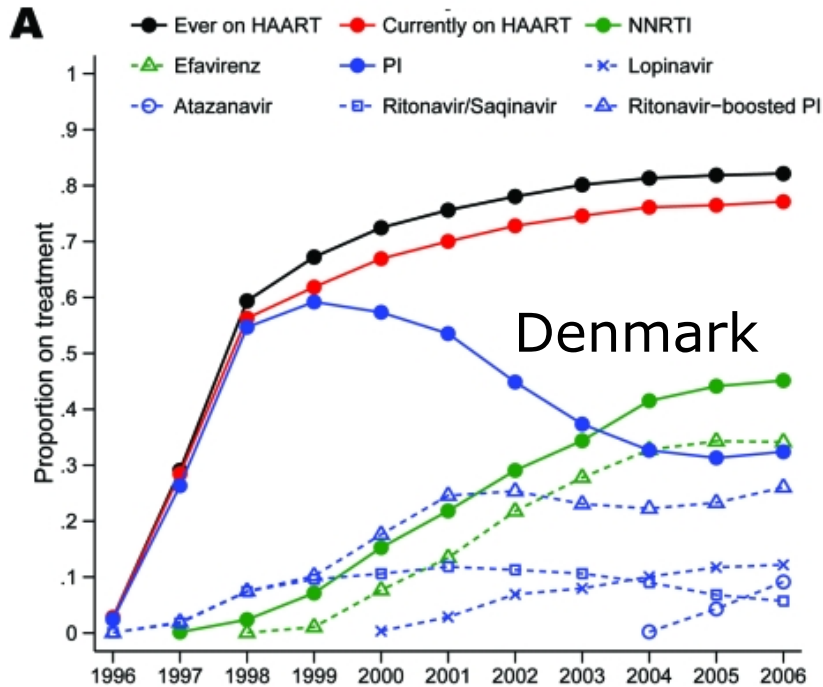
<i>Patient</i>	<i>Subtype</i>	<i>Year of diagnosis</i>	<i>Year of Sampling</i>	<i>Transmission route</i>	<i>PR</i>	<i>RT</i>
GRL28	B	1998	1999	HET		T69N, K70R
GRL44	B	2002	2002	HET	M46L	
GRL45	B	1998	1999	HET		M184V
GRL50	B	2002	2002	HET		D67N, T69N, K70R, K219Q
GRL65	B	2000	2000	HET	L90M	T69N, K70R, M184V
GRL67	B	2001	2001	HET		T69N, K70R
GRL69	B	2000	2001	HET		T69N, K70R
GRL75*	B	2001	2002	HET	L90M	D67N, T69D, K70R, K219Q
GRL96	B	2002	2002	UNK	D30N	T69N, K70R, M184V, K219Q
GRL99	B	2003	2003	MSM		T69N, K70R
GRL100	CRF13	2004	2004	HET	D30N, L90M	D67N, T69D/N, K70R, M184V, T215F, K219Q
GRL105	B	2004	2004	UNK		M184V
<i>GRL106</i>	<i>B</i>	<i>2004</i>	<i>2004</i>	<i>HET</i>	<i>D30N</i>	<i>A62V, V75T</i>
<i>GRL118</i>	<i>B</i>	<i>2005</i>	<i>2005</i>	<i>HET</i>		<i>A98G, K103N, M184V, P225H</i>
<i>GRL128</i>	<i>B</i>	<i>2007</i>	<i>2007</i>	HET		A98G, P225H

\*Known seroconverter (less than six month between last negative and first positive test).

Patients with one-drug class resistance are shown in bold face, patients with two-drug class resistance are shown in italic.

PR: Protease mutations, RT: Reverse transcriptase mutations, HET: Heterosexual, MSM: Men sex with men, UNK: Unknown.

Prevalence of transmitted drug resistance in Greenland 25%, in Denmark 3%



# Implementation and effectiveness of antiretroviral therapy in Greenland

Lohse N, Ladefoged K, Obel N, Emerg Infect dis 2008, 14, 56-9.

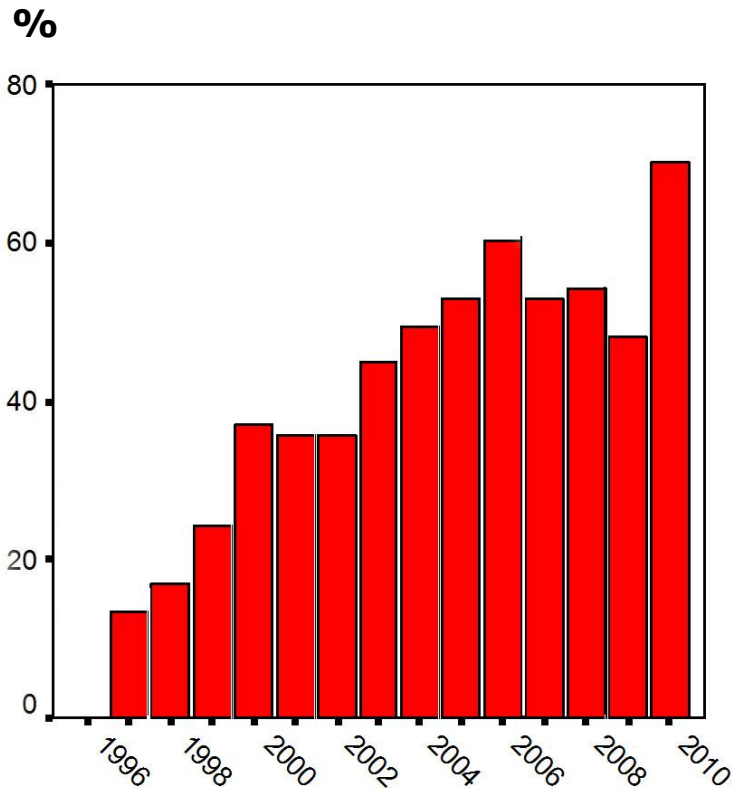
## *Conclusion*

Treatment of HIV in Greenland commenced later and was implemented at a slower pace with a lower therapeutic effectiveness than in Denmark. Marked improvements in the choice of anti-retroviral drug combinations and the effectiveness of HAART from 2003 onwards were observed.

# Treatment outcome in Greenlandic HIV patients

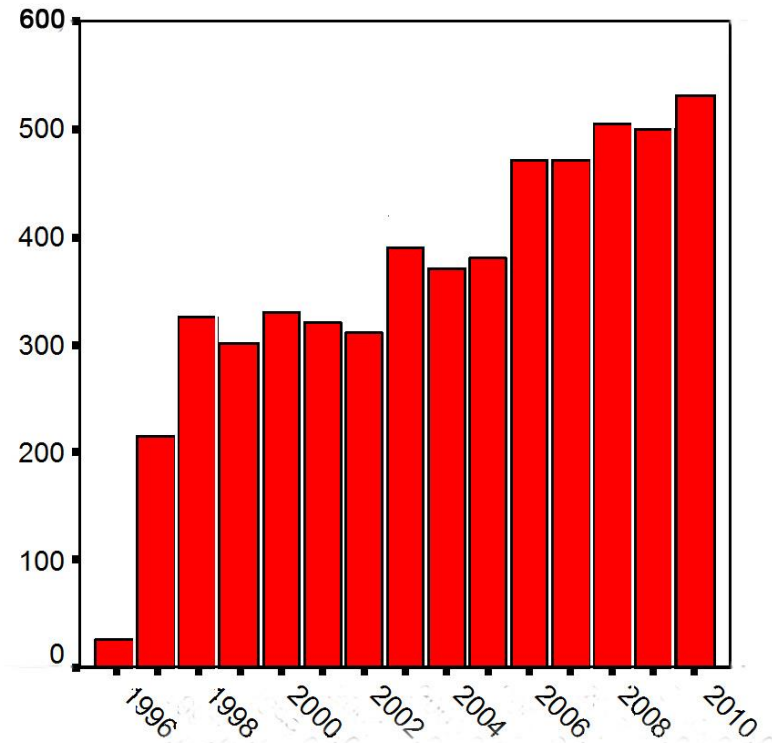
---

## Viral load < 500 copies/ml



## Median CD4 count by year

Cells/ul



# Mortality and causes of death for HIV patients in Greenland

---

	Pre-HAART $\leq 1996$	Early Haart 1997-2004	Late HAART $\geq 2005$
Total N of deaths	16	39	24
Obs. time years	245	449	449
MR/1000 patient years	65	87	53
Median age at death years	53	52	65
AIDS related deaths %	56	62	42
Non-AIDS related deaths %	44	38	58

# Adherence in Greenlandic HIV patients

---

In total 60 patients (2009)

46 participated

5 refused

5 lost to follow up

3 lived in remote areas

1 in jail

76% on pension or social assistance  
80% living alone

39% non adherent (patients lost to follow-up included)

Non-adherence related to

young age (<50y): adjusted RR 8.0 (1.9,43.6)

living in the districts: adjusted RR 6.8 (1.6, 38.4)

# Treatment outcome in relation to adherence

---

## *HIV RNA in patients on HAART copies/ml*

	<200	>=200	RR
Adherence (N=29)	28 (97%)	1	1
Non-adherence (N=12)	2 (17%)	10	24.2 (5.6,420)

## *CD4 count in HIV patients cells/ul*

	>=350	<350	RR
Adherence (N=31)	26 (84%)	5	1
Non-adherence (N=15)	5 (33%)	10	4.1 (1.8,11.4)



# Conclusion

---

- HIV has been introduced several times in Greenland but only one introduction resulted in an epidemic
- Heterosexual transmission among elderly
- A good deal of transmitted resistance
- Poor compliance a big problem especially among young and in the districts
- Although still suboptimal treatment outcome is improved and AIDS related mortality has decreased
- HIV epidemic under control



# Thank you for your consideration



Piglet: "It was not very wise said, Pooh"

Winnie The Pooh: "It was wise when it was inside my head, but something happened on the way out"