

MEDIZINISCHE UNIVERSITÄT
INNSBRUCK

WORKING GROUP Oncology and Hematology

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Gender differences? Gender bias? in Oncology and Hematology

2 Case Studies (F/M)



-death is the **No.1-Killer**

for all women and men **around the world**

M. Hochleitner

Awareness




Bild: <http://www.br-online.de/umwelt/gesundheit/thema/herz/index.xml>

- Heart death is a **male thing!**

M. Hochleitner

„THE YENTL SYNDROME“



B. Healy
New England Journal of Medicine
Vol. 325, No. 4, 274-276, 1991

„Once a woman showed
that she was just like a
man, by having severe
coronary artery disease ...,
then she was treated as a
man would be.“

M. Hochleitner



THIS IS NOT
A RED
DRESS

这不仅仅
是一件
红衣服!

M. Hochleitner

M. Hochleitner



Circulation
American Heart Association
Learn and Live.

AHA Guideline

Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women—2011 Update
A Guideline From the American Heart Association

EXECUTIVE WRITING COMMITTEE

EXPERT PANEL MEMBERS

Structure

1. Gender differences in prevention
2. Gender differences in epidemiology and cancer susceptibility
3. Gender differences in symptomatology and comorbidities
4. Gender difference in pharmacokinetics
5. Gender differences in prognosis and cancer treatment outcome
6. Gender differences in basic science

GENDER DIFFERENCES IN PREVENTION

The best protection is early detection

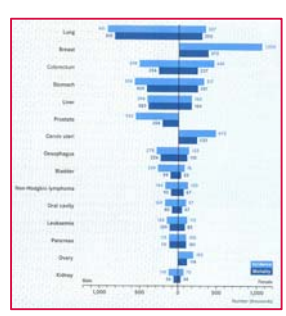


Support Pink Ribbon Quick Donation October

www.pinkribbon.org Enter >

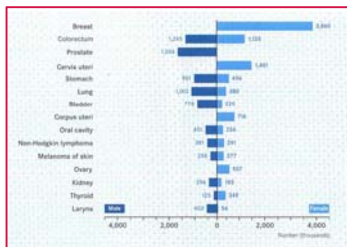
Gender differences in epidemiology

Incidence and mortality of the most common cancers worldwide



World Cancer Report, WHO, IARC Press, Lyon 2003, p13

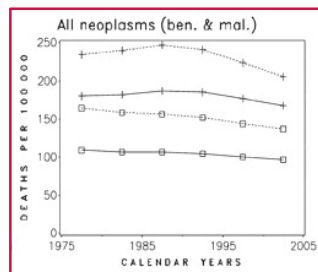
Most prevalent cancers worldwide in 2000
expressed as thousands of persons diagnosed with cancer the previous five years



World Cancer Report, WHO, IARC Press, Lyon 2003, p14



Trends in age-standardised death certification rates per 100.000 in the European Union 1975-2004

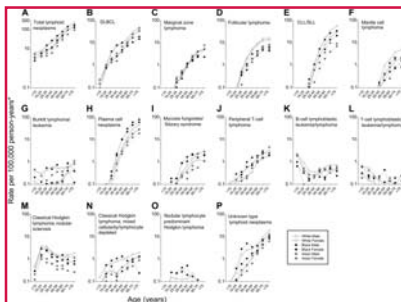


+++ men
--- women
....., all ages

La Vecchia C et al., Ann Oncol 2009; Epub ahead of print



Incidence of lymphoid neoplasms by subtype, race, sex, and age, 12 SEER registries, 1992-2001



Morton et al. Blood 2006;107:265.



Gender differences in symptomatology and comorbidities



Gender difference in pharmacokinetics




Gender differences and drug therapy



Dresser R: Wanted: single, white male for medical research. Hastings Cen Rep 1992; 22: 24-29.






Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women—2011 Update
A Guideline From the American Heart Association

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EXPERT PANEL MEMBERS
Thomas M. Becking, PhD, Drexel University, Philadelphia, PA; et al.

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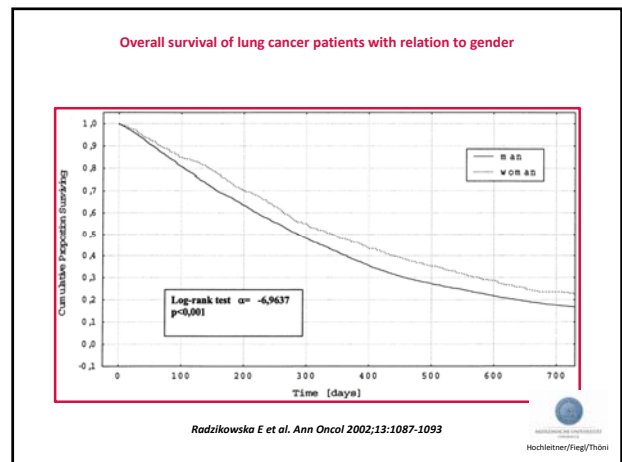
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Table 1. Gender differences in pharmacokinetics for cytostatics and novel biologic antitumoral drugs

Substance	Measure	Outcome	Reference
5-FU	clearance	Lower in women	Milano et al., <i>JCO</i> 1992; 1172
5-FU (contin. infusion)	5-FU clearance	No sex difference	Etienne et al., <i>Eur J Cancer</i> 1996; 34:92
5-FU	Toxicity	Sex and age predictors	Stein et al., <i>Cancer</i> 1995; 75:11
Topotecan PG	Clearance	Lower in women	Loos, <i>Anticancer Drugs</i> 11: 673
Carboplatin	Dosing based on renal function-dependent formula	Women receive lower doses	Booley et al., <i>Eur J Cancer</i> 2003; 38:44
Paclitaxel	Elimination capacity	Lower in women	Joerges, <i>Clin Cancer Res</i> 2006; 12:2150
5-FU, bolus injection	5-FU clearance	Lower in women	Gusella M, <i>Ann Oncol</i> 2006;17:1656.
Topotecan	Toxicity	Higher in women	
Doxorubicin	Clearance	Higher in men	Dobbs, <i>Cancer Chemother Pharmacol</i> 1995;36:473-6.
Pegylated doxorubicin	Clearance	Higher in men	Lo-Bock, <i>Cancer Chemother Pharmacol</i> . 2011 May 18. [Epub ahead of print]
Temozolomide	Clearance	No sex difference	Gusella M, <i>Ann Oncol</i> 2006;17:1656.
Docetaxel, Paclitaxel, Etoposide, Topotecan	Hemato-toxicity: neutropenia	Increased risk in women	Kliff, <i>Clin Cancer Res</i> 2006; 12:5481
Sunitinib	Clearance	Decreased in women	Houk et al., <i>CCR</i> 2009; 2497
Erlotinib	Maximum plasma concentration, AUC, terminal elimination half-life	Increased in women	Frohne, <i>J Clin Pharmacol</i> 2006; 46: 282
Oxaliplatin	Clearance	Decreased in women	Boston, <i>Anticancer Drugs</i> 2003; 14:817
Oxaliplatin	Clearance	No sex difference	De Singh, <i>Cancer Chemother Pharmacol</i> 2004; 54:105-112
Cis/Etoposide	Hemato-toxicity	No sex difference	Miya, <i>Cancer Chemother Phar</i> 1998; 42:386
Capcitabine metabolites	Clearance	Decreased in women	Gieschke, <i>J Pharmacokinetic Pharmacodyn</i> 2002; 29:25
Bevacizumab	Clearance	Decreased in women	Lu, <i>Cancer Chemother Pharmacol</i> 2008; 62: 779
Panitumumab	Clearance	No sex difference	Yang, <i>Clin Pharmacokinetics</i> 2010; 49:729-40.
Bendamustine	Clearance	No sex difference	Owen, <i>Cancer Chemother Pharmacol</i> 2010;66:1039-48

Gender differences in prognosis and cancer treatment outcome

Gender differences in basic science

1. Gender differences in mouse models for lung adenocarcinoma
2. Gender differences in mouse models for liver cancer
3. Gender differences in Non Melanoma Skin Cancer

