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Dr. Gorelick's Qualifications

- Professor and Director Rush Center for Stroke Research and Section of Cerebrovascular Disease & Neurologic Critical Care
- Board-Certified Neurologist
- Busy Clinical Stroke Inpatient and Office Consultative Practice
- 3 NIH and 1 AHA funded case-control studies
- Master of Public Health (Epidemiology)

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Longstanding Interest Role of Drugs in Stroke

- A. Kelly M, Gorelick P, Mirza D. Review: The Role of Drugs in Etiology of Stroke. *Clinical Neuropharmacology* 1992; 15 (4): 249-275.
- B. Gorelick P, et al. Weekly Alcohol Consumption, Cigarette Smoking and the Risk of Ischemic Stroke. *Neurology* 1989; 39:339-345.

Gorelick, PB. Status of Alcohol as a Risk Factor for Stroke (editorial). *Stroke* 1989; 20:1607-1610.

Invited participant Novartis Foundation Symposium, *Alcohol and Cardiovascular Diseases*, London, England; Proceedings Published 1998 (Wiley)

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Overview of Dr. Gorelick's Presentation

Clinical neurologist's view of:

- Risk factors for hemorrhagic stroke
- Key clinical points to consider when evaluating Yale HSP

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Hemorrhagic Stroke

- Accounts for about 15-20% of all strokes
- Two types:
 - **intracerebral (ICH)** – more common
 - **subarachnoid (SAH)** – usually a result of aneurysm or AVM (arteriovenous malformation)
- Arise from different causes and produce different outcomes
- Must consider underlying health status in evaluating contributors to risk

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Hemorrhagic Stroke Risk Factors

ICH

- **Hypertension**
- **Alcohol**
- **Anticoagulants**
- **Age**
- **Men**
- **African-Americans**
- **Drug abuse (cocaine)**

SAH

- **Cigarettes**
- **Hypertension**
- **Alcohol**
- **Age (increases with age; disproportionately younger than IS)**
- **Women**
- **African-Americans**

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Hemorrhagic Stroke Project

Neurologic Considerations

- Cases have a significantly higher frequency of independent risk factors for hemorrhagic stroke
 - Race, education, cigarette smoking, hypertension, family history of stroke, alcohol and cocaine use
- Underlying pathology may contribute to finding
 - History of AVM or aneurysm in 4 of 6 appetite suppressant cases

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Review of Appetite Suppressant Cases

3- DAY WINDOW (APPETITE SUPPRESSANT USERS)

Id No. (cause)	Race Sex	BMI	HTN	Current Smoker	ETOH Use
CASES					
1. 31001 (UNC)	BF	27.49	No	No (ex)	No
2. 33059 (ANU)	NBF	19.38	Yes (1 yr; no meds)	No (never)	3/day
3. 460080 (AVM)	NBF	25.81	No	No (never)	No
4. 460201 (ANU)	NBF	31.35	No	Yes (40/d)	No (history of abuse)
5. 620094 (UNC)	NBF	19.22	No	Yes (30/d)	8/week (history of abuse)
6. 710398 (ANU)	NBF	25.47	Yes (10 yrs; no meds)	Yes (20/d)	1.3/week
CONTROLS					
350043	NBF	38.31	No	No (never)	No

No cocaine (3-day) use among cases or controls

UNC=SAH of ? cause

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Hemorrhagic Stroke Project Neurologic Considerations (cont.)

- Even if the association is real, the number of cases attributed to PPA is extremely low
- No plausible biological mechanism

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Conclusion

- PPA-exposed cases in Yale HSP had typical risk factors for hemorrhagic stroke (e.g., smoking, hypertension)
- Aneurysms and AVM appear to be responsible for at least 4 of 6 cases
- Insufficient control of these risk factors as confounders contributes to uncertainties surrounding the interpretation of the HSP results

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**COUGH-COLD EXPOSURES
(FIRST USE WITHIN 3 DAY WINDOW)**

CASES							
ID No.	Race Sex	Age	Stroke Type	Smoker	HTN	FH Stroke	Other
18-0025	NBF	42	SAH	No	No	None	Prior headaches
20-0092	NBF	48	IPH	Yes (20/day)	No	None	Prior headaches
20-0297	NBF	45	IPH	Ex (10/day)	No	None	
35-0109	NBM	21	SAH	Yes (35/day)	No	None	Heavy Drinker, illicit drugs
45-0008	NBF	42	SAH	No	No	None	Headache
46-0093	NBF	34	SAH	Yes (20/day)	No	None	4 beers/week
71-0026	NBF	31	SAH	Yes (30/day)	Yes	Yes	Moderate Drinker, HTN (no meds) prior headache Diabetic
71-0039	NBF	30	SAH	No	No	Yes	Prior headache

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**COUGH-COLD EXPOSURES
(FIRST USE WITHIN 3 DAY WINDOW)**

CASES							
ID No.	Race Sex	Age	Wt.	Smoker	HTN	Stroke Hx	Other
06-0140B	NBF	25	195	No	No	None	Gestational Diabetic
20-0205B	BM	34	225	No	No	Yes	Heavy drinker 42 beers + 3 mixed drinks
46-0244B	NBF	40	?	Yes (6.5/day)	No	Yes	Cerv. Cancer
71-0038A	NBF	36	125	Yes (20/day)	No	None	Light drinker
71-0349A	NBF	41	190	Ex (20/day)	No	Yes	Light drinker

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