

A review of quantitative approaches to measuring sex partner concurrency

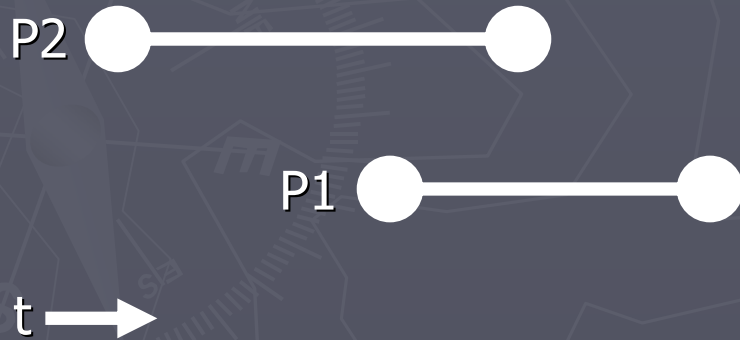
Sara J. Nelson, MPH
University of Washington
Center for AIDS and STD
Department of Epidemiology

Addressing Multiple and Concurrent Sexual Partnerships in Generalized HIV Epidemics
PEPFAR Technical Consultation – Washington D.C. – October 29, 2008

Definition of Concurrency

- ▶ Two or more sexual partnerships that overlap in time

Transitional



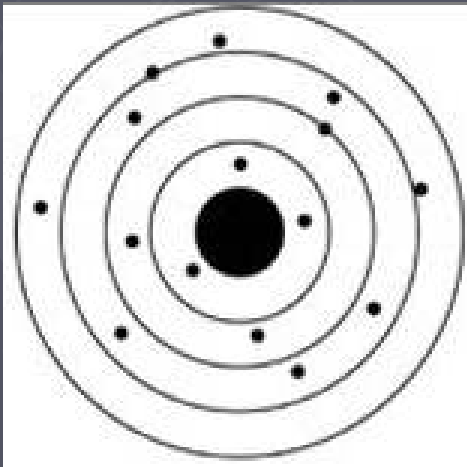
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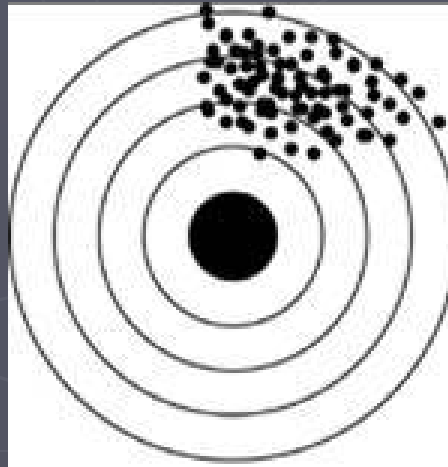
Characteristics of a Good Measure

“We define measurement as the process of linking abstract concepts to empirical indicants.” *(Zeller and Carmines, 1980)*

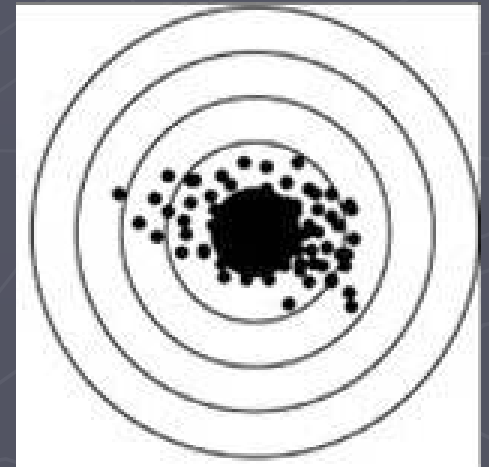
Validity



Reliability



Both



Defining the measurement interval: What timeframe is of interest?

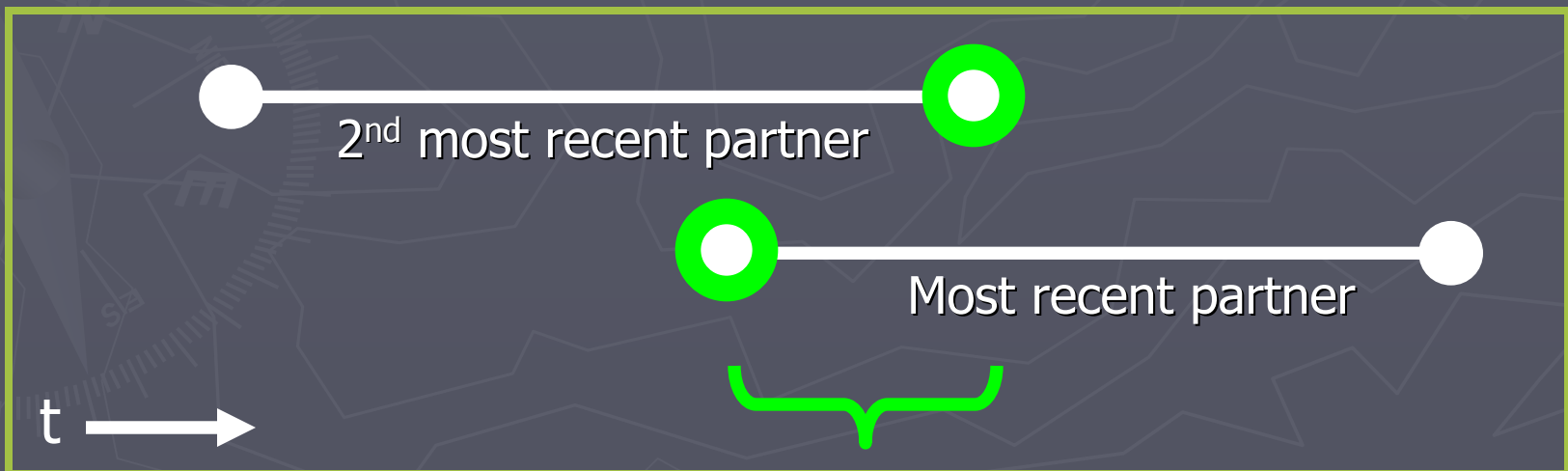
- ▶ Point prevalence of concurrency
 - On day of interview
 - Probably most accurate measure
- ▶ Cumulative prevalence of concurrency
 - Time-delimited (across all partners in last year)
 - Partner-delimited (across last 3 partners)
- ▶ Intensity of overlap
 - Duration + frequency of sex

Review of Concurrency Measures

- ▶ Date method
- ▶ Direct question
- ▶ Coital diaries
- ▶ Proxy measures
- ▶ Partner's concurrency

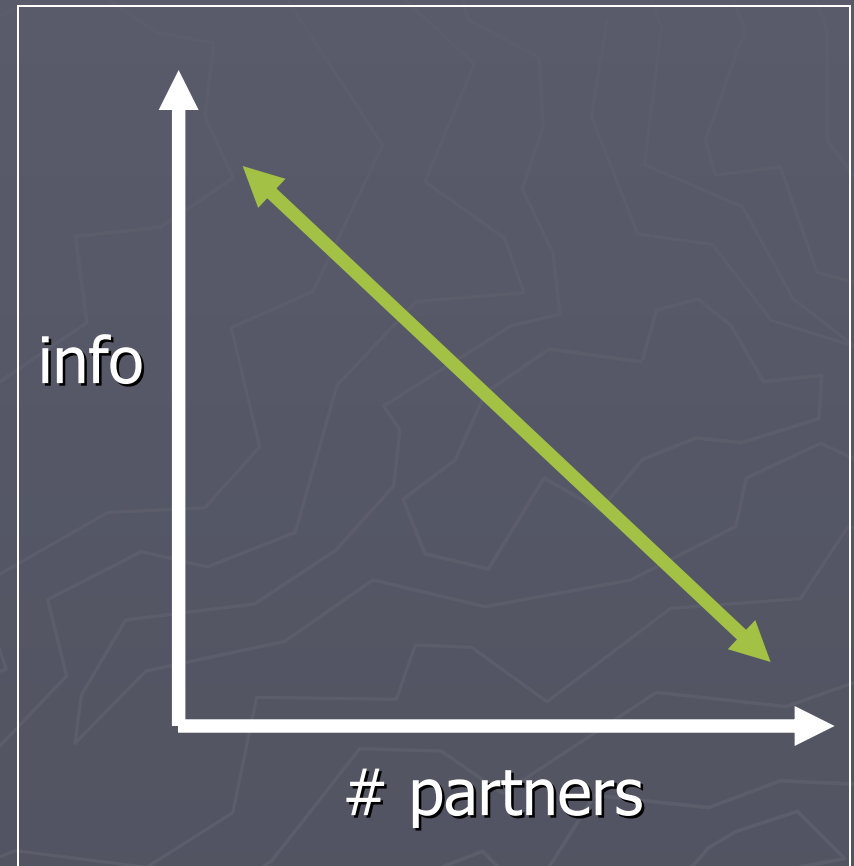
Date Method: Description

- ▶ Establish dates of partnership intervals
- ▶ Calculate the overlap (or gap) between the partnership intervals



Date Method: Requirements

- ▶ To estimate prevalence of concurrency, must have:
 - Start date and end date, or duration + 1 date
 - At least 2 partners
 - Expectation of future sex
- ▶ To estimate intensity of overlap, must have frequency of sex
- ▶ *Additional partner-specific information and behavior*



Date Method: Strengths & Limitations

► Strengths

- Ability to establish prevalence and duration of overlap
- Less prone to social desirability bias
- Can collect data on relational context and partner specific behaviors

► Limitations

- Min. # of questions to establish prevalence and overlap duration is 6
- To increase accuracy of risk assessment, need more questions
- Date reporting issues
 - Missing date elements will require some additional effort
 - Date precision (*Morris and O'Gorman, 2004; Brewer, 2006*)
 - Date reporting error has little effect on concurrency estimates
 - May have bigger effect with short partnerships and short gaps

Direct Question: Description & Examples

- ▶ A single question that asks about additional partners during a sexual relationship
- ▶ Examples
 - "Did you have at least 1 other partner during the time you've been seeing this partner?" (Jennings, 2004)
 - "Since you first had sex with your most recent partner, how many other people did you have sex with during the sexual relationship?" (Nelson, 2007)
 - "During the time you were having a sexual relationship with this partner, did you have sex with other people?" (CDC NHBS)

Direct Question: Requirements

- ▶ For each partnership
 - Single question – Any partners? How many partners?
 - *Use previous partner's name*
- ▶ Number of partnerships
 - Only need 1
 - Can ask about more
- ▶ *Additional partner-specific information & behavior*

Direct Question: Strengths and Limitations

► Strengths

- Single question
- Minimizes missing data

► Limitations

- No estimate of overlap duration
- Social desirability bias

Coital Diaries

- ▶ Prospective, daily survey of sexual behavior
- ▶ Examples
- ▶ Strengths
 - Can establish prevalence, incidence, duration of overlap
 - Longitudinal design minimizes recall bias
- ▶ Limitations
 - Resource intensive
 - An intervention itself?

Proxy Measures

- ▶ An indirect (substitute) measure of concurrency
- ▶ Examples
 - >1 partner in past 3 months
(*Colvin, 1998; Kalichman, 2007; Lichtenstein, 2008*)
 - >1 partner in past 7 days (*Bowen, 2006*)
 - 2+ partners in the past 12 months (*Kongnyuy, 2006*)
- ▶ Strength: salvage previously collected data
- ▶ Limitation: misclassification

Partner's Concurrency: Description and Examples

- ▶ Partner has other partners
 - Direct: ask partner directly
 - Indirect: knowledge/perception of respondent
- ▶ Examples
 - Enroll partner and ask them directly
(Drumright, 2004; Lenoir, 2006)
 - "To the best of your knowledge, did he ever have other sex partners while you two were having a sexual relationship?" *(Kerrigan, 2008)*

Partner's Concurrency: Strengths and Limitations

▶ Strength

- Most relevant measure for assessing respondent's HIV/STI acquisition risk

▶ Limitations

- Difficult to enroll partners
- Known vs. unknown partner concurrency

Partner's Concurrency

- ▶ Poor agreement in couples studies of perceived partner's concurrency

Study	Person aware that partner is nonconcurrent	Person aware that partner is concurrent	kappa
Lenoir, 2006	61%	37%	0.04 (m) 0.22 (f)
Drumright, 2004	86%	26%	0.17

Direct Comparisons of Concurrency Measures



Direct Comparison of Measures

- Prevalence of concurrency, various measures

Country	At least 2 current partners at interview	Overlap of the last 2 partnerships
Martinique	13%	23%
Guadeloupe	14%	29%
Guyana	13%	20%

Direct Comparison of Measures

- ▶ Compared direct and date measures (Nelson, 2007)
 - Young adults (age 18-26), 3 public US STD Clinics
 - Provided data on ≥ 2 partners using CASI
- ▶ Missing data
 - Direct question = 1.8%
 - Date method = 21.3%
- ▶ Concurrency prevalence
 - Direct question = 55.5%
 - Date method = 53.5%
 - Kappa = 0.395 ("fair" agreement, accounts for chance)

What measure of concurrency should I use?

- ▶ What do you want to measure?
 - Prevalence only
 - ▶ Direct question sufficient
 - Prevalence, intensity of overlap
 - ▶ Date method necessary
 - Respondent's STI acquisition risk
 - ▶ Partner's concurrency
 - Determinants of concurrency
 - ▶ ↑ partner-by-partner questions

What measure of concurrency should I use?

- ▶ What kinds of resources do you have for your survey?
 - Mode of administration
 - ▶ Complexity of questionnaire
 - Interviewer training
 - ▶ Data accuracy, social desirability
 - Respondent burden
 - ▶ How much information can you collect
 - Sampling
 - ▶ Inference, population-based vs. clinic-based

General Measurement Considerations

- ▶ Single definition, multiple measures
- ▶ What have we learned about validity and reliability?
 - Fair agreement between measures; low agreement within couples
 - Need concordance studies among different populations
 - Appears to be good accuracy based on point prevalence (unpublished)

General Measurement Considerations

- ▶ Standards for questionnaire design & administration
 - Retrospective period (day of interview is potentially the gold standard)
 - Be specific about the sexual behavior you're asking about
 - Record dates explicitly, not in categories
 - Don't force respondents to report more accurately than they can remember
 - For date method, don't forget to ask all 3 questions for each partner
 - Don't ask too many questions

General Measurement Considerations

- ▶ Standards for reporting results
 - Indicate concurrency measure, direct vs. proxy
 - What measure of prevalence, point vs. cumulative
 - Be clear about sampling frame

Thank you!

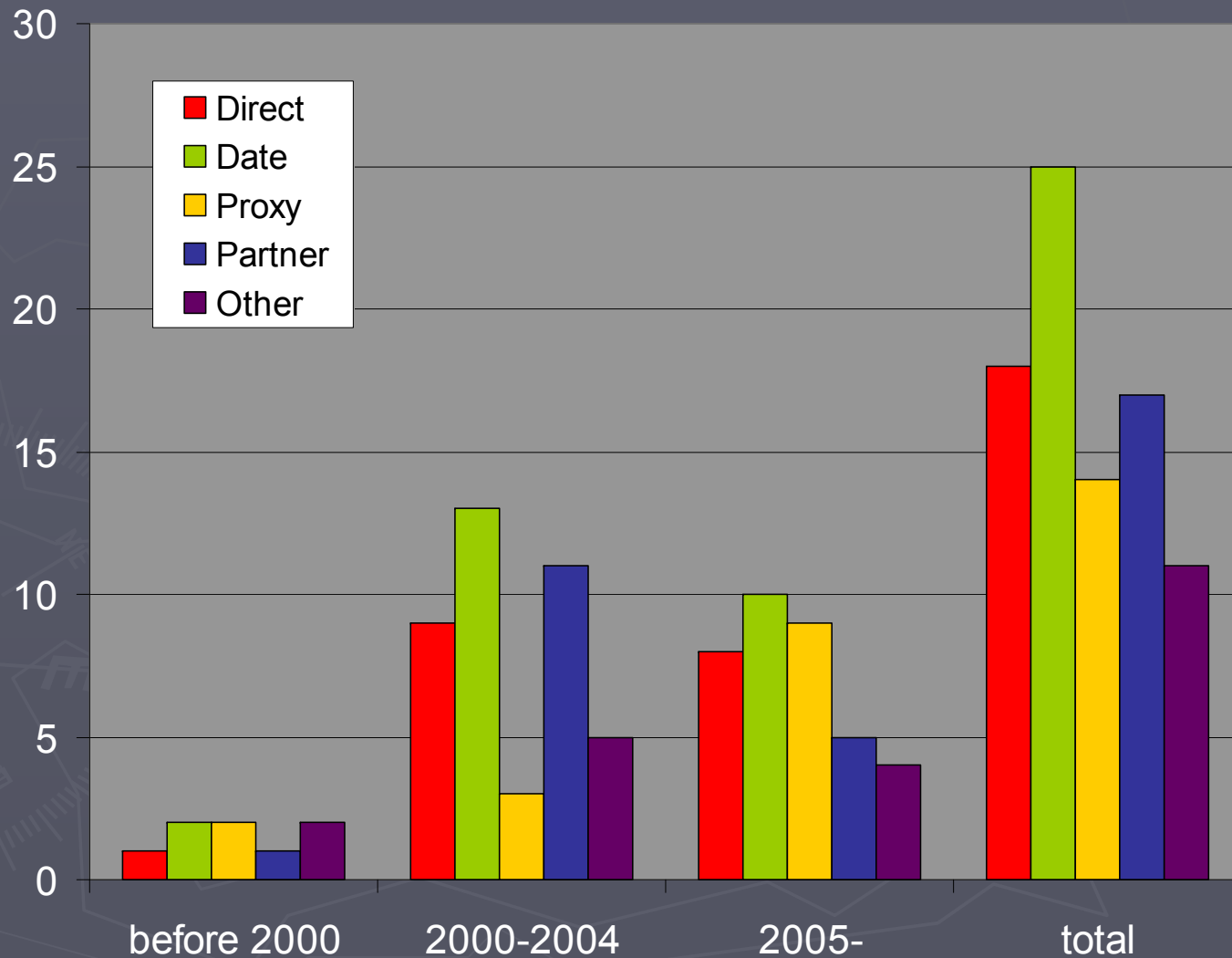
Dr. Martina Morris
Dr. Matthew Golden
Dr. Lisa Manhart
Deven Hamilton

Sara J. Nelson, MPH
University of Washington
Center for AIDS and STD
Department of Epidemiology
sjnelson@u.washington.edu

Extra Data Slides



Use of Concurrency Measures in the HIV/STI Literature



DHS Survey Data

Country	DHS Survey Year	P1		P2		P3	
		Last	Dur	Last	Dur	Last	Dur
Mali	2006	X	X		X		X
Niger	2006	X	X		X		X
Swaziland	2006	X	X	X	X	X	X
Zimbabwe	2006	X	X	X	X	X	X
Ethiopia	2005	X	X	X*	X		
Rwanda	2005	X	X		X		X
Cameroon	2004	X	X*		X*		X*
Lesotho	2004	X	X		X		X
Ethiopia	2001	X	X		X		
Mali	2001	X	X		X		X
Rwanda	2000	X	X		X		X
Zimbabwe	1999	X	X		X		X^
Cameroon	1998	X		X			
Niger	1998	X	X		X		

* Female questionnaire only ^ Male questionnaire only

Date Method: Date Precision

Morris & O’Gorman, 2006

Concurrency with:	Simulated “true”	Simulated with error	Difference
P1 & P2	30.5%	32.7%	+2.2
P1 & P3	4.1%	6.4%	+2.3
P2 & P3	9.7%	14.1%	+4.4
Any 2 partners	33.3%	35.9%	+2.6

- Main finding: date reporting error has little effect on concurrency estimates
 - ▶ May have bigger effect with short partnerships and short gaps
- Similar findings using US STD contact tracing data (Brewer, 2006)

Partner's Concurrency

- ▶ Two ways to assess accuracy:
 - Aggregate level
 - Partnership level

		Partner's concurrency			
		Yes	No	Total	
Female perception of partner's concurrency	Yes	16	10	54	=60%
	No	20	34	26	
	Don't know	2	8	10	
	Total	38	52	90	=42%

Date Method: Recording Dates

- ▶ How long have you been sexually involved with Partner?
 - -less than 1 week
 - -more than 1 week, but less than a month
 - -one to six months
 - -more than six months but less than a year
 - -one to three years
 - -more than three years

Direct Comparison of Measures

► Prevalence of concurrency, various measures

	At least 2 current partners at interview	At least 2 current partners 12 mos before interview	Last pt'ship lasted >12 mos and others >12 mos	Overlap of the last 2 pt'ships	Overlap of 2 pt'ships in past year, existing partners	Overlap of 2 pt'ships in past year, new partners	Overlap of 2 pt'ships in past year, existing and new partners
Martinique	13%	17%	24%	23%	9%	18%	26%
Guadeloupe	14%	20%	27%	29%	10%	23%	33%
Guyana	13%	18%	23%	20%	6%	24%	30%

Direct Comparison of Measures

	Concurrent by Direct Question			
Concurrent by Calendar Method	Yes	No	Missing	Total
Yes	206	74	6	280
No	85	164	0	249
Missing	80	59	6	145
Total	291	238	12	680