Early Diagnosis of HIV Infection: Gateway to Treatment and Prevention

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The most recent HIV/AIDS Surveillance data from CDC estimates <u>what percentage</u> of HIV infected persons living in America will develop AIDS within 12 months of their initial HIV diagnosis?

1. 10%
2. 20%
3. 30%
4. 40%

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Late Diagnosis of HIV Infection in San Francisco, 2001-2005

(S. Schwarcz et al. JAIDS 2006;43:491-494)

- 2139 of 2243 residents diagnosed with AIDS
- 830/2139 (38.8%) "late testers" – i.e., HIV(+)dx. 12 mos. or less before AIDS dx.
- Prevalence of late testing stable, 2001-2005
- Late testing more likely (OR)
  - persons without reported risk (2.88)
  - < 30 yrs. (1.99)
  - heterosexual (1.88)
  - born outside of US (1.64)

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Risk Factors for Concurrent Diagnosis of HIV/AIDS in New York City: 2004

(L. Torian and E. Wiewel, 14th CROI, Los Angeles CA 2/25-28/2007)

- 28% (1038/2615) with an incident diagnosis of HIV were diagnosed with AIDS within 31 days
- Concurrent HIV/AIDS was positively associated with increasing age: 17% in 20-29 year olds vs. 41% in persons aged 50-59 years old
- Concurrent diagnoses more common among heterosexuals (42%) vs. homosexuals (21%)
- Concurrent diagnoses more common in foreign-born (37%) vs. US-born (26%)

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Medical Encounters in the Five Years Before HIV Diagnosis

(Klein et al. JAIDS 2003;32:143-152)

- ►440 persons newly diagnosed with HIV in 1998 and having at least 12 months membership in Kaiser-Permanente (median, 5.7 yrs.)
- ►23% tested (-) at least once before; 12% had declined testing one or more times
- ►Only 26% had risk factors documented in charts
- ►88% of patients had CD4+ count w/in 60 days: 43% <200 CD4+ (immunologic AIDS)
- ►"Late dx. remains a challenge despite good access to care"

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HIV Testing of High Risk VHA Patients

(Gifford et al., abstract 356 Int. AIDS Mtg. Toronto, August 2006)

- 270,901 high-risk patients (HBV, HCV, STD, drug use)*
- 21% (56,695) tested for HIV, 1999-2005
- Higher testing rates among:
  - Younger (35-44 yr OR 7.81)
  - Never married (OR 1.67)
  - African-Americans (OR 1.46)
  - Hispanic (OR 1.23)

* $\geq$ 2 primary care visits between 6/04-5/05

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Delayed Presentation for HIV Care Among Veterans

(N. Gandhi et al., 13th CROI, 2006.)

- Retrospective observational cohort
- 3760 HAART naïve veterans newly presenting for HIV care, 1998-2002
- 55% had baseline CD4+ counts < 200
- 36% had an AIDS complication within 1 year of presentation
- 40% had used VA services prior to HIV presentation – 3.7 years median
- "Current testing practices based on clinical suspicion of HIV infection are too insensitive"

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Late Initiation of ARV Therapy Among Veterans

(Holodniy et al., JAIDS 2007;44:20-29.)

Year	Guideline Recommendation	CD4+ of Veterans Starting Treatment
1998-2000 n = 2,987	CD4+ < 500	60%: CD4+ < 350 40%: CD4+ < 200
2001-2004 n = 3,099	Offer at: CD4+ < 350 Initiate at: CD4+ < 200	25%: CD4+ < 100 15%: CD4+ < 50

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Risk-Based Testing: The Denver Experience*

(T.C. Jenkins et al., Sex Trans Dis 2006;33(5):329-333)

- ►Retrospective review: 348 newly diagnosed HIV+s, 9/01-12/03
- ►34% had at least 1 clinical encounter with Denver Health in the 3 years pre-dx – Only 8% of these had a previous (-) HIV test
- ►Most of the prior encounters were in ED and urgent care center
- ►Of those with baseline CD4+ counts (111/120), 29% (32/111) had immunological AIDS at HIV dx
- ►"The broad range of clinical diagnoses at prior visits precludes effective targeted HIV testing based on specific clinical scenarios" (p. 333)

* comprehensive urban health care system consisting of hospital, ED, community health centers, school-based clinics, urgent care centers, specialty clinics, community outreach, etc.

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Benefits of Routine Screening for HIV

- Providers may be uncomfortable assessing risk
- Providers may not have adequate time to assess risk
- Patients may not be comfortable revealing risks
- Patients, especially women, may be unaware of their risks
- Offering testing based on risk misses infected patients
- Routine screening has been shown to be cost-effective
- Early diagnosis results in better medical and prevention outcomes

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Cost Effectiveness of Routine HIV Testing

(see Wolf & Walensky Curr Infec Dis Rep 2007; 9:76-82)

"Frequently cited U.S. threshold for cost-effective care: $50K-$100K per QALY"

- ►Paltiel et al.: at an HIV prevalence of 1%, CE of one-time routine screening was $38K/QALY saved (NEJM 2005; 352: 586-595)
- ►Walensky et al.: at an HIV prevalence of 1%, CE of routine screening was $35.4K/QALY (Am J Med 2005; 118:292-300)
- ►at an HIV prevalence rate of 0.1%, CE of routine screening was $64.5K/QALY (ibid.)

  "…comparable to the CE ratios calculated for breast cancer and colon cancer screening"

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Meta-Analysis of High-Risk Sexual Behavior in Persons Aware and Unaware they are Infected with HIV in the U.S.*

(G Marks et al. JAIDS 2005;39:446-453)

Reduction in Prevalence of Unprotected Anal or Vaginal Intercourse HIV (+) Aware vs. HIV (+) Unaware

All findings ……………………………………68%
Male participants……………………………..70%
Female participants…………………………..66%

"The prevalence of high-risk sexual behavior is reduced substantially after people become aware they are HIV(+)."

* 11 independent findings from 4 studies and 4 multi-site data sets (1988-2003)

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Estimating Sexual Transmission of HIV from Persons Aware and Unaware of HIV Infection

(Marks, Crepaz, & Janssen; AIDS 2006, 20:1447-1450)

“Thus, of the approximately 40,000 new HIV infections each year in the U.S., 32,000 are sexual transmissions… the HIV positive unaware group contributes disproportionately to these new infections… the transmission rate is 3.5 times higher in the unaware group.” (p. 1449)

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Combined Rapid & HIV RNA Testing to Detect Acute HIV Infection

(Klausner et al. #953 14th CROI, Los Angeles 2/25-28/2007)

- Between 2004 – June 2006, 716 persons at SF STD clinic had rapid ab test:
  - 47 (6.6%) positive
  - 669 (93.4%) negative
- Pooled (10 negative) plasma specimens tested for HIV RNA: 9/669 (1.3%) were RNA positive
- All patients with (+) RNA tests counseled and referred to care
- HIV case detection ↑ 19% (9 of 47) & highly infectious patients notified

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A meta-analysis of HIV risk reduction interventions for persons living with HIV/AIDS (PLWH), conducted by Crepaz and her colleagues (AIDS 2006; 20:143-157), concluded the following:

1. interventions significantly reduced unprotected sex by nearly half
2. intervention effects were seen at 3-4 months but not at 6-12 months post intervention
3. interventions significantly decreased the acquisition of STDs
4. 1 and 3 are correct
5. all are correct

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Incorporating HIV Prevention into the Medical Care of Persons Living with HIV

(MMWR 2003;52(RR12):1-24)

- ►At initial visit:
  - -- take sexual history
  - -- screen men and women for syphilis
  - -- screen women for trichomoniasis
  - -- screen women 25 years or younger for Chlamydia
  - -- consider screening for GC based on sexual history
- ►Repeat STD screening at least annually
- ►Question about symptoms of STDs at each visit
- ►Routinely screen for behaviors associated with HIV transmission
- ►Question women of childbearing age about pregnancy at each visit

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Incorporating HIV Prevention into the Medical Care of Persons Living with HIV

(MMWR 2003;52(RR12):1-24)

Health Education & Behavioral Interventions

- ►Routinely provide brief messages about the importance of safer behaviors
- ►Correct misconceptions about the impact of treatment on transmission
- ►Assume that all patients can transmit HIV – even those with undetectable viral loads
- ►Availability of PEP shouldn't justify risky behaviors
- ►Explore role that alcohol/drug use might have on unsafe behaviors
- ►Utilize other clinical staff to reinforce messages

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Brief Safer-Sex Counseling by Medical Providers to HIV(+) Patients

(Richardson et al. AIDS 2004;18:1-8)

- ►585 HIV(+) patients from 6 CA clinics, 1999-2000
- ►2 clinics "gain-framed": positive consequences of safer sex
  2 clinics "loss-framed": negative consequences of unsafe sex
  2 clinics "control": medication adherence
- ►3-5 minute counseling plus brochures
- ►Participants with $\geq$ 2 partners at baseline, self-reported unprotected anal/vaginal intercourse ↓ 38% at F/U (3 mos.) among those who received "loss-framed" intervention ($p < 0.001$)
- ►No sig. changes in "gain-framed" arm

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Minimizing Transmission of Resistant Strains: Another Rationale for Prevention With Positives

- ►1998: random sample of 1,797 patients under care for HIV since 1996, 76% resistant to 1 or more ARVS (AIDS 2004; 18:1393-1401)
- ►1995-2000: prevalence of genotypic resistance in 337 persons with new HIV infec in N Amer ↑ from 8% to 23% (NEJM 2002; 347:385-394)
- ►2004: among 55 recently infected adolescents (15 U.S. cities), 24% had evidence of phenotypic or genotypic resistance (JID 2006; 194:1505-1509)
- ►2004: among 333 HIV (+) patients, 23% reported unprotected sex, past 3 mos. – of these, 24% had resistant virus (AIDS 2004; 18:2185-2189)

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Enough Time for Prevention in Primary Care?

(Yarnall et al., AJPH 2003; 93:635-651)

- ►Calculated amount of time required to provide services recommended by U.S. Preventive Services Task Force
- ►Assumed a practice size of 2,500 patients
- ►Overall finding: physicians don't have enough time
- ►Group A* services would require 2.2 hours/day
- ►Group B** services would require 5.2 hours/day

* good evidence to support recommendation

** fair evidence to support recommendation

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Lifetime Cost of HIV Care in the United States

(Schackman et al. Medical Care 2006; 44: 990-997)

"…the potential savings per HIV infection prevented is $303,100…preventing the estimated 40,000 new HIV infections in the U.S. each year would avoid obligating $12.1 billion annually in future medical costs for HIV infected persons…"

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