IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF PENNSYLVANIA

DANIEL BINDERUP,	)	
	)	
Plaintiff,	)	
v.	)	
	)	**Case No. 5:13-cv-06750-JKG**
ERIC H. HOLDER, JR., Attorney General of the United States et al.,	)	
	)	
Defendants.	)	

DEFENDANTS' MOTION TO DISMISS OR FOR SUMMARY JUDGMENT

Pursuant to Fed. R. Civ. P. 12(b)(6) and 56, Defendants Eric H. Holder, Jr., and B. Todd Jones ("Defendants") hereby move this Court to dismiss Plaintiff's Complaint, or, in the alternative, for entry of summary judgment in favor of Defendants. This motion is accompanied by a memorandum of law, incorporated herein, stating the authorities on which Defendants rely in support of this motion.

Dated: February 20, 2014

Respectfully submitted,

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MEMORANDUM IN SUPPORT OF DEFENDANTS'
MOTION TO DISMISS OR FOR SUMMARY JUDGMENT

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INTRODUCTION

The Gun Control Act of 1968 prohibits individuals convicted of crimes punishable by imprisonment for a term of more than one year from possessing firearms. 18 U.S.C. § 922(g)(1). In 1998, Pennsylvania convicted Plaintiff of corruption of a minor, a crime that carries a maximum statutory penalty of 5 years imprisonment. Plaintiff now contends that he is entitled to possess a firearm notwithstanding 18 U.S.C. § 922(g)(1), arguing that the statute does not encompass his conviction or, alternatively, that Section 922(g)(1) violates the Second Amendment as applied to him. Neither argument has merit. First, Plaintiff's crime was punishable by a term of imprisonment exceeding two years, so he falls squarely within the scope of Section 922(g)(1). Second, Plaintiff's constitutional challenge to the statute is unavailing. Section 922(g)(1) applies solely to persons with prior criminal convictions; it does not implicate the Second Amendment's protection of "the right of law-abiding, responsible citizens to use arms in defense of hearth and home," Dist. of Columbia v. Heller, 554 U.S. 570, 635, 128 S.Ct. 2783, 2821, 171 L.Ed.2d 637 (2008). In any event, even if Plaintiff's challenge to the statute did implicate the Second Amendment, prohibiting possession of firearms by a person who has been convicted of predatory sexual conduct with a minor substantially relates to the important government interest in combating violent crime and preserving public safety. Accordingly, the Court should dismiss this action, or enter summary judgment for Defendants.

STATUTORY BACKGROUND

In 1961, Congress amended the Federal Firearms Act of 1938, 15 U.S.C. §§ 901 et seq., to prohibit "any person . . . convicted of a crime punishable by imprisonment for a term exceeding one year" from "receiv[ing] any firearm or ammunition which has been shipped or transported in interstate or foreign commerce." See An Act to Strengthen the Federal Firearms

Act, Pub. L. No. 87-342, 75 Stat. 757 (1961); H.R. Rep. No. 87-1202 (1961), at 4-5. Congress introduced the amendment at the specific request of the Attorney General as "an integral part of an anticrime legislative program" in response to the "exploding crime rate" of recent years. H.R. Rep. No. 87-1202, at 2. Its purpose was to "better assist local authorities in the common assault on crime" and to "make it more difficult for the criminal element of our society to obtain firearms." Id. The Gun Control Act of 1968, as amended, 18 U.S.C. § 921 et seq., additionally prohibited individuals convicted of a crime punishable by imprisonment for over one year from "possess[ing] in or affecting commerce, any firearm or ammunition." Gun Control Act of 1968, Pub. L. No. 90-618, 82 Stat. 1213, 1220-21 (1968). These prohibitions are codified at 18 U.S.C. § 922(g)(1).

Excluded from "[t]he term 'crime punishable by imprisonment for a term exceeding one year'" are "State offense[s] classified by the laws of the State as a misdemeanor and punishable by a term of imprisonment of two years or less." 18 U.S.C. § 921(a)(20)(B). Also excluded is "[a]ny conviction which has been expunged, or set aside or for which a person has been pardoned or has had civil rights restored . . . unless such pardon, expungement, or restoration of civil rights expressly provides that the person may not ship, transport, possess, or receive firearms." Id. § 921(a)(20).[1]

FACTUAL BACKGROUND

On or around June 1996, when Plaintiff was 41 years of age, Plaintiff engaged in indecent contact and sexual intercourse with his employee, who was 17 years of age. See Affid. of Prob. Cause, Police Crim. Compl., No. 4127-1997, Pennsylvania v. Binderup (attached as Ex.

[1] Congress also excluded from the statutory term "crime punishable by imprisonment for a term exceeding one year" any "Federal or State offenses pertaining to antitrust violations, unfair trade practices, restraints of trade, or other similar offenses relating to the regulation of business practices." 18 U.S.C. § 921(a)(20)(A).

1). The unlawful conduct between Plaintiff and his employee continued until August 1997. Id. Plaintiff was aware of his employee's underage status at the time of the unlawful conduct. Id. On July 15, 1998, Plaintiff pleaded guilty in the Court of Common Pleas of Lancaster County, Pennsylvania to violating 18 Pennsylvania Consolidated Statutes § 6301, Corruption of Minors, a first-degree misdemeanor punishable by up to five years' imprisonment. See Sentencing Order and Guilty Plea, No. 4127-1887 (attached as Ex. 2).[2] Section 6301 provides in relevant part: "[W]hoever, being the age of 18 years and upwards, by any act corrupts the morals of any minor less than 18 years of age, or who aids, abets, entices or encourages any such minor in the commission of any crime, or who knowingly assists or encourages such minor in violating his or her parole or any order of court, commits a misdemeanor of the first degree." 18 Pa.C.S.A. § 6301(a)(1)(i). Pennsylvania law includes three degrees of misdemeanors, and a person convicted of a misdemeanor of the first degree "may be sentenced to imprisonment for a definite term which shall be fixed by the court and shall be not more than . . . [f]ive years." Id. § 1104. Plaintiff was sentenced to three years' probation, and fined $300, plus court costs and restitution. See Ex. 2.

ARGUMENT

I. Plaintiff's Conviction for Misdemeanor Corruption of a Minor Was Punishable by a Term of Imprisonment Exceeding Two Years and Therefore Is Properly the Basis for a Firearms Disability Under 18 U.S.C. § 922(g)(1).

In Count I, Plaintiff seeks declaratory and injunctive relief barring Defendants from enforcing 18 U.S.C. § 922(g)(1) against him based on his misdemeanor conviction under 18 Pa.C.S.A. § 6301, Corruption of Minors. Plaintiff expressly concedes that he was convicted of a first-degree misdemeanor in Pennsylvania, which is "punishable by up to five years'

[2] Exhibits 1 and 2 have been redacted pursuant to Local Civil Rule 5.1.3.

imprisonment." Compl. ¶¶ 7, 8. Plaintiff contends, however, that this conviction cannot be the basis for a firearms disability under 18 U.S.C. § 922(g)(1) because, he argues, it is a misdemeanor "punishable by a term of imprisonment of two years or less," 18 U.S.C. § 921(a)(20)(B), as demonstrated by the fact that his own individual punishment did not include any term of imprisonment. Compl. ¶ 27.

Plaintiff's contention that the applicability of the firearms disability in 18 U.S.C. § 922(g)(1) depends on the sentence *actually imposed* rather than the maximum potential sentence applicable to the underlying state court conviction has been rejected by every court to consider it, including the Third Circuit in a case that squarely controls the outcome here. In United States v. Essig, the court held that a conviction under the precise statute at issue here, 18 Pa.C.S.A. § 6301, fell within the scope of 18 U.S.C. § 922(g)(1), notwithstanding the fact that the petitioner in that case was only sentenced to probation with no prison term. 10 F.3d 968, 972-73 (3d Cir. 1993), *superseded on other grounds*. The defendant in that case had similarly argued that "the term 'punishable' in § 921(a)(20) means actually 'punished' by a year or more of incarceration." Id. at 972. The court explicitly rejected the argument that "federal law does not deprive a convict of his right to possess a firearm unless his sentence actually imposed a prison term of the required length," noting that "the Supreme Court has clearly established that it is the potential sentence that controls and not the one actually imposed." Id. at 973 (citing Dickerson v. New Banner Inst., Inc., 460 U.S. 103, 113, 103 S.Ct. 986, 74 L.Ed.2d 845 (1983)). See also United States v. Leuschen, 395 F.3d 155, 158 (3d Cir. 2005) ("[T]he only qualification imposed by § 922(g)(1) is that the predicate conviction carry a *potential* sentence of greater than

one year of imprisonment.") (emphasis added). There is no basis for distinguishing Plaintiff's argument here from the one rejected in Essig.[3]

Because Plaintiff was convicted of a first-degree misdemeanor punishable by up to five years' imprisonment, he falls squarely within the ambit of Section 922(g)(1), and does not qualify for the statutory exception set forth in Section 921(a)(20)(B).[4] The Court should therefore dismiss Count I.

[3] Other courts have consistently rejected this argument as well. See, e.g., Schrader v. Holder, 704 F.3d 980, 986 (D.C. Cir. 2013) ("Because common-law offenses carry no statutory maximum term of imprisonment, they are capable of being punished by a term of imprisonment exceeding one year and thus fall within section 922(g)(1)'s purview. And because such offenses are also capable of being punished by more than two years' imprisonment, they are ineligible for section 921(a)(20)(B)'s misdemeanor exception."), cert. denied, 134 S.Ct. 512, 187 L.Ed.2d 365 (2013); United States v. Coleman, 158 F.3d 199, 203-04 (4th Cir. 1998) (en banc) ("We believe that the statutory language of § 921(a)(20)(B) unambiguously indicates that the critical inquiry in determining whether a state offense fits within the misdemeanor exception is whether the offense is 'punishable' by a term of imprisonment greater than two years – not whether the offense 'was punished' by such a term of imprisonment."); United States v. Horodner, 992 F.2d 191, 194 (9th Cir. 1993) ("Whether Horodner was a felon under 18 U.S.C. § 922(g)(1) depends on whether either of his state convictions was *punishable* by more than one year in prison.") (citing Dickerson, 460 U.S. at 113, 103 S.Ct. at 992) (emphasis in original).

[4] Plaintiff does not allege that he falls within Section 921(a)(20)'s exception for a "conviction which has been expunged, or set aside or for which a person has been pardoned or has had civil rights restored." In any event, any such argument would be foreclosed by Third Circuit precedent. That court, like many of its sister courts of appeals, has held that the "civil rights" referred to in this provision are the right to vote, the right to seek and hold public office, and the right to sit on a jury. Essig, 10 F.3d at 975. Under Pennsylvania law, a citizen may not serve on a jury if he or she "has been convicted of a crime punishable by imprisonment for more than one year and has not been granted a pardon or amnesty therefor." 42 Pa.C.S.A. § 4502(a)(3). Because Plaintiff remains ineligible for jury service by virtue of his conviction, his civil rights have not been restored, and he does not fall within this statutory exception. See Essig, 10 F.3d at 975-76. Furthermore, the fact that Pennsylvania law no longer restricts Plaintiff from owning or possessing firearms has no bearing on the applicability of the exception in Section 921(a)(20). See Leuschen, 395 F.3d at 160 ("The absence of firearms restrictions . . . becomes relevant only if the convict's core civil rights have been restored. . . . If the defendant 'has not had civil rights restored,' it simply does not matter what the state law provides concerning possession of firearms.") (citations omitted).

II. As Applied to Plaintiff, 18 U.S.C. § 922(g)(1) Does Not Violate the Second Amendment.

The Second Amendment provides: "A well regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed." U.S. Const., amend. II. In Heller, after determining that the Second Amendment conferred an individual right to keep and bear arms, 554 U.S. at 595, 128 S.Ct. at 2799, the Supreme Court held that "the District's ban on handgun possession in the home violates the Second Amendment, as does its prohibition against rendering any lawful firearm in the home operable for the purpose of immediate self defense." Id. at 635, 128 S.Ct. at 2821-22. The Court's holding was narrow, and addressed only the "core" right of "*law-abiding, responsible* citizens to use arms in defense of hearth and home." Id. at 634-35 (emphasis added).

Like other constitutional rights, the right to keep and bear arms is "not unlimited." Heller, 554 U.S. at 626, 128 S.Ct. at 2816. Although the Supreme Court declined to "undertake an exhaustive historical analysis . . . of the full scope of the Second Amendment," it cautioned that "*nothing* in [its] opinion *should be taken to cast doubt* on *longstanding prohibitions on the possession of firearms by felons* . . . ." Id. at 626-27, 128 S.Ct. at 2816-17 (emphasis added); see also id. at 627 n.26, 128 S.Ct. at 2817 n.26 (describing such "regulatory measures" as "presumptively lawful").

Applying Heller, the Third Circuit in United States v. Marzzarella, 614 F.3d 85 (3d Cir. 2010), established a two-pronged approach for courts in this Circuit to apply when analyzing Second Amendment challenges: "First, we ask whether the challenged law imposes a burden on conduct falling within the scope of the Second Amendment's guarantee. If it does not, our inquiry is complete. If it does, we evaluate the law under some form of means-end scrutiny. If

the law passes muster under that standard, it is constitutional. If it fails, it is invalid." Id. at 89 (internal citation and footnote omitted).

As the Third Circuit has recognized, the challenged law proscribes activity that falls outside the scope of the Second Amendment's protections. See id. at 92 ("[T]he Second Amendment affords no protection for . . . possession by felons and the mentally ill[.]"). In any event, as applied to Plaintiff, the law relates substantially to the compelling governmental interests in combating violent crime and protecting public safety, and is therefore constitutional.

A. Disarming Plaintiff Is Consistent with the Scope of the Second Amendment as Understood at the Adoption of the Bill of Rights.

In Robertson v. Baldwin, 165 U.S. 275, 281, 17 S.Ct. 326, 329, 41 L.Ed. 715 (1897), the Supreme Court declared it to be "perfectly well settled" that the Bill of Rights embodies "certain guaranties and immunities which we had inherited from our English ancestors, and which had, from time immemorial, been subject to certain well-recognized exceptions, arising from the necessities of the case." And "[i]n incorporating these principles into the fundamental law, there was no intention of disregarding the exceptions, which continued to be recognized as if they had been formally expressed." Id. This principle governs here. The Third Circuit has explained that if the Second Amendment "codified a pre-existing right to bear arms," and if that right "as commonly understood at the time of ratification did not bar restrictions on possession by felons or the mentally ill, it follows that by constitutionalizing this understanding, the Second Amendment carved out these limitations from the right." Marzzarella, 614 F.3d at 91. And though "exclusions [from the right to bear arms] need not mirror limits that were on the books in 1791," when the Second Amendment was enacted, United States v. Skoien, 614 F.3d 638, 641 (7th Cir. 2010) (en banc), nevertheless, the Supreme Court's acknowledgment in Heller that

Congress has the authority to disarm individuals convicted of serious crimes is consistent with the history of the right to arms as it developed in England and the American colonies.

Heller identified the right protected by the 1689 English Declaration of Rights as "the predecessor of our Second Amendment." 554 U.S. at 593, 128 S.Ct. at 2798. This document provided: "That the subjects which are Protestants may have arms for their defense suitable to their conditions and *as allowed by law*." Id. (quoting 1 W. & M., c. 2, § 7, in 3 Eng. Stat. at Large 441 (1689)) (emphasis added). It is undisputed that, both before and after its adoption, the English government retained the power to disarm individuals it viewed as dangerous.[5]

Most significantly for present purposes, the English Declaration of Rights did not repeal the 1662 Militia Act, which authorized lieutenants of the militia (appointed by the King) to disarm "any person or persons" judged "*dangerous to the Peace of the Kingdome*." 13 & 14 Car. 2, c. 3, § 1 (1662) (Eng.) (emphasis added). Such persons included persons convicted of a crime. Joyce Lee Malcolm, for example – whose commentary was cited in Heller, see 554 U.S. at 592-93, 128 S.Ct. at 2798 – notes that a Nottinghamshire laborer was bound "not to shoot again for seven years" after a misdemeanor conviction for "shooting with hailshot." Joyce Lee Malcolm, To Keep and Bear Arms 10 (1994). As for those caught committing more serious crimes, forfeiture of firearms was apparently a given. English criminal law was notoriously harsh, prescribing both forfeiture of all property (including, presumably, any firearms) and, frequently, execution for the innumerable crimes designated as felonies. 4 William Blackstone, Commentaries on the Laws of England 95 (1769) (felonies "subject the committers of them to forfeitures"), id. at 384 (same); id. at 18 (counting 160 acts "to be felonies without benefit of

[5] By providing that Protestants could have arms "suitable to their conditions" and "as allowed by law," the Bill of Rights apparently provided only a small minority of upper-class Protestants a right to arms. Lois Schwoerer, To Hold and Bear Arms: The English Perspective, 76 Chicago-Kent L. Rev. 27, 47-48, 59 (2000).

clergy," i.e., "worthy of instant death"). "The practice of subjecting felons to literal or 'civic' death - in which the person's legal existence was destroyed - continued in early America." United States v. Tooley, 717 F. Supp. 2d 580, 590 (S.D. W.Va. 2010) (citation omitted), aff'd, 468 F. App'x 357, cert. denied, 133 S.Ct. 212, 184 L.Ed.2d 109 (2012).

The documentary record surrounding the adoption of the Constitution confirms that the right to keep and bear arms was limited to "law-abiding and responsible" citizens. "[M]ost scholars of the Second Amendment agree that the right to bear arms was tied to the concept of a virtuous citizenry and that, accordingly, the government could disarm 'unvirtuous citizens.'" United States v. Yancey, 621 F.3d 681, 684-85 (7th Cir. 2010) (per curiam) (citations omitted). "[I]t is clear that the colonists, at least in some manner, carried on the English tradition of disarming those viewed as 'disaffected and dangerous.'" Tooley, 717 F. Supp. 2d at 590. Indeed, "[m]any of the states, whose own constitutions entitled their citizens to be armed, did not extend this right to persons convicted of crime." Skoien, 614 F.3d at 640.[6]

[6] Notably, "Heller identified as a 'highly influential' 'precursor' to the Second Amendment the Address and Reasons of Dissent of the Minority of the Convention of the State of Pennsylvania to Their Constituents," which "asserted that citizens have a personal right to bear arms "*unless for crimes committed*, or real danger of public injury." Skoien, 614 F.3d at 640 (quoting Heller, 554 U.S. at 604, 128 S.Ct. at 2804; 2 Bernard Schwartz, The Bill of Rights 662, 665 (1971) (emphasis added)). This proposal demonstrates that, at the time the Constitution was adopted, even ardent supporters of guaranteeing an individual right to keep and bear arms recognized that criminals and other dangerous individuals should not enjoy its benefits. Although the Second Amendment itself proved more "succinct[ ]" than the Pennsylvania proposal, Heller, 554 U.S. at 659, 128 S.Ct. at 2835 (Stevens, J., dissenting), the latter remains probative of how the Amendment's supporters viewed the balance between public security and the right to keep and bear arms. See Heller, 554 U.S. at 605, 128 S.Ct. at 2804 (reaffirming that "the Bill of Rights codified venerable, widely understood liberties"); see also Stephen P. Halbrook, The Founders' Second Amendment 273 (2008) (concluding that the Second Amendment did not need to contain "an explicit exclusion of criminals from the individual right to keep and bear arms, because this . . . was understood"); Tooley, 717 F. Supp. 2d at 591 ("Acceptance of the 'virtuous citizen' historical understanding of the right to firearms would explain why the Second Amendment itself does not contain specific exclusions to the right.").

Given this context, it is important to recognize that one crime punishable under early English criminal law was carnal knowledge of a female under a particular age, regardless of the female's consent. A 1576 statute provided: "[I]f any person shall unlawfully and carnally know any woman child under the age of ten years, every such unlawful and carnal knowledge shall be felony, and the offender thereof being duly convicted shall suffer as a felon without allowance of clergy." Mortimer Levine, A More Than Ordinary Case of "Rape," 13 and 14 Elizabeth I, 7 Am. J. Legal Hist. 159, 163 (1963) (quoting 18 Elizabeth c. 7 (1576)); see also 5 Blackstone's Commentaries 212 (St. George Tucker ed. 1803) (under this statute, "the consent or non-consent [of the victim] is immaterial"). This statute formed part of the common law originally brought to the United States. See Michael M. v. Superior Ct. of Sonoma Cty., 450 U.S. 464, 494 n.9, 101 S.Ct. 1200, 1218 n.9, 67 L.Ed.2d 437 (1981) (Brennan, J., dissenting); Nider v. Commonwealth, 131 S.W. 1024, 1026, 140 Ky. 684 (Ky. 1910).[7]

Nor was the Pennsylvania proposal an aberration. In Massachusetts, Samuel Adams offered a similar amendment at the ratifying convention, recommending "that the said Constitution be never construed to authorize Congress … to prevent the people of the United States who are *peaceable* citizens, from keeping their own arms." Schwartz, The Bill of Rights, at 674-75, 681 (emphasis added). Although not identical to the Pennsylvania proposal, this formulation likewise reflected an understanding that arms could be denied to those whose inability to control their behavior threatened public safety.

[7] Plaintiff may contend that this fact is irrelevant because the minor involved in Plaintiff's crime was not under ten years of age. However, that is not the point for which this statute is cited. Rather, the statute shows that, to the extent that a historical analysis is relevant here, the nature of the conduct for which Plaintiff was convicted would have been recognized during the Founding Era as punishable by criminal sanctions. And given the significant discretion afforded to legislatures in prescribing age-of-consent laws, the law under which Plaintiff was convicted represents a difference in degree, not in kind. See Nider, 131 S.W. at 1026 ("It will thus be seen that our statute upon the subject is merely a recognition of the common law of offense, which it has modified by changing the age of consent from 10 to 16, and fixing the penalty at confinement in the penitentiary in place of death.").

In short, historical scholarship demonstrates that, in both England and the colonies, governments could and did disarm people they perceived as dangerous. Accordingly, the historical record regarding the right to keep and bear arms provides no basis for deviating from Heller's conclusion that laws disarming convicted criminals are "permissible" under the Second Amendment. See Ezell v. City of Chi., 651 F.3d 684, 702-03 (7th Cir. 2011) (explaining that if "a challenged firearms law regulates activity falling outside the scope of the Second Amendment right as it was understood [in 1791] then the analysis can stop there.").[8] Because 18 U.S.C. § 922(g)(1) does not implicate a right protected by the Second Amendment, the Court's inquiry should end at the first step of Marzzarella's two-step inquiry.

B. In Any Event, As Applied to Plaintiff, 18 U.S.C. § 922(g)(1) Substantially Relates to the Important Governmental Interest in Protecting Public Safety and Combating Violent Crime.

If the Court does proceed to the second step of Marzzarella to apply means-end scrutiny, it should still uphold 18 U.S.C. § 922(g)(1) as applied to Plaintiff. The Third Circuit has applied intermediate scrutiny to regulations that do not implicate "the core of the [Second] Amendment," Marzzarella, 724 F.3d at 436, i.e., "the right of law-abiding, responsible citizens to use arms in defense of hearth and home." Heller, 554 U.S. at 635, 128 S. Ct. at 2821, 171 L.Ed.2d 637.

[8] Moreover, in prohibiting persons such as Plaintiff from exercising a constitutional right, "the Second Amendment is not unique; felony convictions trigger a number of disabilities, many of which impact fundamental constitutional rights." United States v. Barton, 633 F.3d 168, 175 (3d Cir. 2011) (citing McKune v. Lile, 536 U.S. 24, 38, 122 S.Ct. 2017, 153 L.Ed.2d 47 (2002)) ("[L]awful conviction and incarceration necessarily place limitations on the exercise of a defendant's privilege against self-incrimination."); Jones v. Helms, 452 U.S. 412, 419, 101 S.Ct. 2434, 69 L.Ed.2d 118 (1981) (upholding restrictions on an offender's fundamental right to travel); Richardson v. Ramirez, 418 U.S. 24, 54–56, 94 S.Ct. 2655, 41 L.Ed.2d 551 (1974) (upholding a state disenfranchisement law based on criminal conviction); and D.C. Code § 49–401 (prohibiting "persons committed of any infamous crime" from serving in a militia)); see also Pa.C.S.A. § 4502(a)(3) (prohibiting a person from serving on a jury if he or she "has been convicted of a crime punishable by imprisonment for more than one year and has not been granted a pardon or amnesty therefor").

Other courts have likewise applied intermediate scrutiny in assessing as-applied challenges to statutes including Section 922(g)(1). See, e.g., United States v. Williams, 616 F.3d 685, 692 (7th Cir. 2010); see also Skoien, 614 F.3d at 641 (applying intermediate scrutiny in evaluating constitutional challenge to 18 U.S.C. § 922(g)(9), prohibiting any person convicted of a "misdemeanor crime of domestic violence" from possessing firearms); Schrader, 704 F.3d at 988-89 (applying intermediate scrutiny in evaluating constitutionality of Section 922(g)(1) as applied to common-law misdemeanants).

To satisfy intermediate scrutiny, "a statutory classification must be substantially related to an important governmental objective." Clark v. Jeter, 486 U.S. 456, 461, 108 S.Ct. 1910, 1914, 100 L.Ed.2d 465 (1988). There can be little doubt that an important government interest is at stake here. Section 922(g)(1) was enacted to "keep guns out of the hands of those who have demonstrated that they may not be trusted to possess a firearm without becoming a threat to society." United States v. Small, 544 U.S. 385, 393, 125 S.Ct. 1752, 1758, 161 L.Ed.2d 651 (2005) (citation and internal punctuation omitted); Burrell v. United States, 384 F.3d 22, 27 (2d Cir. 2004) (Section 922(g)(1) "was one of several measures enacted by Congress to 'prohibit [ ] categories of presumptively dangerous persons from possessing firearms'") (quoting Lewis v. United States, 445 U.S. 55, 64, 100 S.Ct. 915, 920, 63 L.Ed.2d 198 (1980)).

Protecting public safety and combating crime are well-established *compelling* governmental interests. See United States v. Salerno, 481 U.S. 739, 748-50, 107 S.Ct. 2095, 2102-03, 95 L.Ed.2d 697 (1987) (noting that the Supreme Court has "repeatedly held that the Government's regulatory interest in community safety can, in appropriate circumstances, outweigh an individual's liberty interest" and that the government's "general interest in preventing crime is compelling"); Schall v. Martin, 467 U.S. 253, 264, 104 S. Ct. 2403, 2410, 81

L.Ed.2d 207 (1984) ("The legitimate and compelling state interest in protecting the community from crime cannot be doubted.") (citation and internal punctuation omitted).

Several factors are relevant to the Court's application of intermediate scrutiny. First, the degree of fit between the challenged law and the governmental interest it serves need only be "reasonable." Drake v. Filko, 724 F.3d 426, 436 (3d Cir. 2013). Second, "[w]hen reviewing the constitutionality of statutes, courts 'accord substantial deference to the legislature's predictive judgments.'" Id. at 436-37 (quoting Turner Broad. Sys. v. FCC, 520 U.S. 180, 195, 117 S. Ct. 1174, 137 L.Ed.2d 369 (1997)) (internal punctuation omitted). Third, as the Supreme Court has noted, the "quantum of empirical evidence needed to satisfy heightened judicial scrutiny of legislative judgments varies up or down with the novelty and plausibility of the justification raised." Nixon v. Shrink Mo. Gov't PAC, 528 U.S. 377, 391, 120 S.Ct. 897, 906, 145 L.Ed.2d 886 (2000).

Recidivism is a "reality" that legislatures need not ignore. Samson v. California, 547 U.S. 843, 849, 126 S.Ct. 2193, 2198, 165 L.Ed.2d 250 (2006). Thus, relatively little empirical evidence should be required to satisfy intermediate scrutiny in this case. Nevertheless, the empirical evidence shows a substantial relationship between Section 922(g)(1) as applied to convicted criminals such as Plaintiff and Congress's goals of protecting public safety and combating violent crime. As the Third Circuit has recognized: "It is well-established that felons are more likely to commit violent crimes than are other law-abiding citizens." Barton, 633 F.3d at 175 (citing Bureau of Justice Statistics, Recidivism of Prisoners Released in 2004, at 6 (2002), finding that within a population of 234,358 federal inmates released in 1994, the rates of arrest for homicides were 53 times that the national average). Convicted offenders as a group – including those convicted of crimes that did not involve violence – present a significant risk of

recidivism for violent crime. A study of 210,886 nonviolent offenders released in 1994 from prisons in 15 States demonstrated that approximately 1 in 5 offenders was rearrested for violent offenses within three years of his or her release. See Bureau of Justice Statistics Fact Sheet, Profile of Nonviolent Offenders Exiting State Prisons, Table 11 (Oct. 2004) (attached as Ex. 3). See also Kaemmerling v. Lappin, 553 F.3d 669, 683 (D.C. Cir. 2008) ("Other courts . . . have observed that nonviolent offenders not only have a higher recidivism rate than the general population, but certain groups – such as property offenders – have a higher recidivism rate than violent offenders, and a *large percentage of the crimes nonviolent recidivists later commit are violent*.") (emphasis added) (citing cases); Yancey, 621 F.3d at 685 ("[M]ost felons are nonviolent, but someone with a felony conviction on his record is more likely than a nonfelon to engage in illegal and violent gun use.") (citation omitted); Mona A. Wright et al., Effectiveness of Denial of Handgun Purchase to Persons Believed to Be at High Risk for Firearm Violence, 89 Am. J. of Public Health 88, 89 (1999) (concluding, based on a study of handgun purchases denied as a result of a prior conviction or arrest for a crime punishable by imprisonment or death, that "denial of handgun purchase is associated with a reduction in risk for later criminal activity of approximately 20% and 30%") (attached as Ex. 4).

Individuals convicted of statutory rape as a class are also much more likely than the general population to commit future crimes. See Pennsylvania Dep't of Corrections, Recidivism Report 2013 at 20-21 (50% of individuals released from Pennsylvania state prison for statutory rape were rearrested or reincarcerated for another crime – not necessarily statutory rape – within three years);[9] Lisa L. Sample & Timothy L. Bray, Are Sex Offenders Different? An Examination of

[9] *Available at* http://www.cor.state.pa.us/portal/server.pt/community/research___statistics/10669/reports/10699

Rearrest Patterns, 17 Crim. Just. Pol'y Rev. 83, 93 (2006) (37.4% of sex offender arrestees – including but not limited to individuals arrested for statutory rape – in Illinois between 1990 and 1997 whose victims were between 13-18 years of age were rearrested within 5 years);[10] Delaware Office of Management & Budget Statistical Analysis Center, Recidivism of Delaware Adult Sex Offenders Released from Prison in 2001 (July 2007), at 11 (90.9% of statutory rapists released from prison in Delaware in 2001 were rearrested for a new crime or violation of probation or parole within 3 years, 45.5% for a felony offense);[11] Tennessee Bureau of Investigation, Crime Statistics Unit, Recidivism Study (Aug. 17, 2007), at 5 (highest rearrest rates of sex offenders released from Tennessee jails and prisons in 2001 were statutory rapists, with a rearrest rate of 30.7%);[12] U.S. Dep't of Justice, Office of Justice Programs, Bureau of Justice Statistics Special Report: Recidivism of Prisoners Released in 1994, at 8 tbl. 9, 15 (41.4% of people released from prison for "other sexual assault" – which includes (1) forcible or violent sexual acts not involving intercourse with an adult or minor, (2) nonforcible sexual acts with a minor (such as statutory rape or incest with a minor), and (3) nonforcible sexual acts with someone unable to give legal or factual consent because of mental or physical defect or intoxication – were re-arrested within 3 years).[13]

Especially given the "substantial deference" afforded to "predictive judgments" made by Congress in order to advance these interests, Turner Broad. Sys., 512 U.S. at 665, 114 S. Ct. at 2470, this data establishes that 18 U.S.C. § 922(g)(1) satisfies intermediate scrutiny as applied to

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[10] *Available at* http://cjp.sagepub.com/content/17/1/83.full.pdf.

[11] *Available at* http://cjc.delaware.gov/sac/publications/documents/recidivism_adult_2007.pdf.

[12] *Available at* http://www.tbi.tn.gov/tn_crime_stats/publications/SexOffenderRecidivism2007.pdf.

[13] *Available at* http://www.bjs.gov/content/pub/pdf/rpr94.pdf.

Plaintiff, even if, as Plaintiff alleges, he is now a "responsible, law-abiding American citizen" and "unlikely to act in a manner dangerous to public safety." Compl. ¶ 29. As numerous courts have recognized, intermediate scrutiny does not require the government to show that each individual encompassed within a statutory proscription poses a particular danger. See, e.g., United States v. Chapman, 666 F.3d 220, 231 (4th Cir. 2012) ("[T]he prohibitory net cast by [the statute] may be somewhat over-inclusive given that not every person who falls within it would misuse a firearm . . . if permitted to possess one," but "[t]his point does not undermine the [statute's] constitutionality . . . because it merely suggests that the fit is not a perfect one[] [and] a reasonable fit is all that is required under intermediate scrutiny."); United States v. Scroggins, 599 F.3d 433, 451 (5th Cir. 2010) (rejecting defendant's contention that "his conviction for possession of firearms by a felon, without any further showing of violent intent, violates his Second Amendment rights"); see also Tooley, 717 F. Supp. 2d at 597 ("Section 922(g)(9) is of course overbroad in the sense that not every domestic violence misdemeanant who loses his or her right to keep and bear arms would have misused them against a domestic partner or other family member. Under intermediate scrutiny, however, the fit does not need to be perfect, but only be reasonably tailored in proportion to the important interest it attempts to further. As such, intermediate scrutiny tolerates laws that are somewhat overinclusive.") (footnote and citations omitted); United States v. Miller, 604 F. Supp. 2d 1162, 1172 (W.D. Tenn. 2009) ("Although prohibiting gun possession by nearly all felons might not be the most precisely focused means to achieve this end, intermediate scrutiny, by definition, permits Congress to paint with a broader brush.") (footnotes and internal citation omitted).

Moreover, the conclusion that Section 922(g)(1) is constitutional as applied to offenders whose crimes were not necessarily violent in nature is consistent with near-uniform case law

applying the Second Amendment. While it is true that "[f]or nearly a quarter century, § 922(g)(1) had a narrower basis for a disability, limited to those convicted of a crime of violence," Barton, 633 F.3d at 173 (citation and internal punctuation omitted), by 1961, Congress appears to have determined that a narrower prohibition would not serve its interest in public safety. Cf. United States v. Laurent, 861 F. Supp. 2d 71, 105 (E.D.N.Y. 2011) (noting that "[i]nitially, Congress only limited receipt of firearms by violent indictees" in the Federal Firearms Act of 1938, but that "[a]fter three decades of experience, it saw the need to expand the prohibition to all indictees"). And as the Fourth Circuit recently stated: "[O]ur sister circuits have consistently upheld applications of § 922(g)(1) even to *non-violent* felons." United States v. Pruess, 703 F.3d 242, 247 (4th Cir. 2012) (citing cases) (emphasis in original). See, e.g., United States v. Everist, 368 F.3d 517, 519 (5th Cir. 2004) (rejecting facial Second Amendment challenge to Section 922(g)(1); "Irrespective of whether the offense was violent in nature, a felon has shown manifest disregard for the rights of others. He may not justly complain of the limitation on his liberty when his possession of firearms would otherwise threaten the security of his fellow citizens.");[14] United States v. Vongxay, 594 F.3d 1111, 1116-18 (9th Cir. 2010) (reaffirming pre-Heller precedent "declin[ing] to make a distinction between violent and non-violent felons and [holding] that [Section] 922(g)(1), which prohibits all felons from possessing firearms, was constitutional"); Chardin v. Police Com'r of Boston, 989 N.E.2d 392, 398-403, 465 Mass. 314, 321-27 (Mass. 2013) (upholding state prohibition on carrying of firearms by

[14] Though decided before Heller, Everist applied the Fifth Circuit's earlier decision in United States v. Emerson, 270 F.3d 203 (5th Cir. 2001), which held that the Second Amendment "protects the rights of individuals, including those not then actually a member of any militia or engaged in active military service or training, to privately possess and bear their own firearms . . ." Id. at 260.

felons as applied to individual convicted as a juvenile for possession of a firearm and ammunition without a license), cert. denied, 134 S.Ct. 525 (2013).[15]

The Third Circuit has suggested that a person could raise a successful as-applied challenge by "present[ing] facts about himself and his background that distinguish his circumstances from those of persons historically barred from Second Amendment protections." Barton, 633 F.3d at 174. "For instance, a felon convicted of a minor, non-violent crime might show that he is no more dangerous than a typical law-abiding citizen." Id. However, to satisfy this standard, Plaintiff would need to show, inter alia, that he was convicted of a minor crime. But Plaintiff was convicted of corruption of a minor for engaging in predatory sexual behavior with a teenage employee 24 years his junior, with full knowledge that the employee was under the age of 18. And Plaintiff's unlawful conduct did not result from a single instance of a lapse in judgment; rather, he continued this criminal behavior for approximately 14 months. Moreover, as explained above, Plaintiff's conviction was punishable by up to five years in prison. Pennsylvania has three categories of misdemeanors, and a first-degree misdemeanor (like the one

[15] See also United States v. Ernst, 857 F. Supp. 2d 1098, 1103 (D. Or. 2012) ("Here, defendant's status as a felon defeats his argument that he has the right to bear arms, *regardless of the non-violent nature* of his prior convictions.") (emphasis added); United States v. Schultz, 2009 WL 35225, at *1-3 (N.D. Ind. Jan. 5, 2009) (upholding Section 922(g)(1) as applied to offender convicted of failure to pay child support); United States v. Davis, 2010 WL 1607836, at *2 (W.D. Wis. April 20, 2010) (upholding Section 922(g)(1) as applied to offender convicted of nonviolent offense (heroin distribution)); appeal dismissed, 406 F. App'x 52 (7th Cir. 2010); United States v. Ligon, 2010 WL 4237970, at *6 (D. Nev. Oct. 20, 2010) (upholding Section 922(g)(1) as applied to offender convicted of stealing government property); United States v. Westry, 2008 WL 4225541, at *2 (E.D. Mich. Sept. 9, 2008) (upholding Section 922(g)(1) as applied to felon convicted of narcotics distribution and carrying concealed weapon; "The Supreme Court [in Heller] made no distinction for nonviolent felonies."); Wilson v. United States, 2006 WL 519393 at *1, 6 (M.D. Tenn. Feb. 28, 2006) (applying Emerson and upholding Section 922(g)(1) as applied to a "previously adjudicated non-violent (mail fraud) felon"); State v. Pocian, 814 N.W.2d 894 (Wis. App.) (applying intermediate scrutiny and upholding state prohibition on firearms possession by felons as applied to offender convicted of writing forged checks), review denied, 827 N.W.2d 96 (2012).

Plaintiff was convicted of) is the only degree that triggers the federal prohibition on the possession of firearms; second- and third-degree misdemeanors have possible maximum sentences of two years and one year, respectively. 18 Pa.C.S.A. § 1104. Thus, the Commonwealth considers the criminal offense that Plaintiff committed to be the most serious type of misdemeanor and one that since 1968 has triggered the federal prohibition. And Pennsylvania has retained the criminal offense of corruption of minors, without substantial change, since at least 1939. See id. § 6301 cmt. (1972).

Plaintiff's belief that his particular conviction should be viewed differently "flows not from any insight gleaned from [Section 922(g)(1)], but rather from plaintiff['s] flawed belief that [his] offense[is] trivial." Schrader, 704 F.3d at 988. This belief lacks foundation. All 50 States criminalize adult sexual contact with a minor, see Richard A. Posner & Katharine B. Silbaugh, A Guide to America's Sex Laws 44-64 (1996). The continued existence of these criminal laws confirms the recognized legal and sociological principle that under a particular age, individuals lack the capacity to legally consent to sexual activity because they lack the emotional and physical maturity to appreciate the full consequences of such activity. See, e.g., People v. Gonzales, 561 N.Y.S.2d 358, 361, 148 Misc.2d 973, 977 (N.Y. Co. Ct. 1990) ("It has long been recognized that the state has the authority to regulate the sexual conduct of its minors by setting age limits to establish whether the individual is sufficiently mature to make intelligent and informed decisions and to consent to certain activities."); State v. Bruegger, 773 N.W.2d 862, 886 (Iowa 2009) ("[I]n light of the risk of disease, pregnancy, and serious psychological harm that can result from even apparently consensual sexual activity involving adults and adolescents," statutory rape should not be "view[ed]. . . as a victimless crime."). By contrast, an

adult perpetrator *is* expected to appreciate the full ramifications of sexual activity with an underage individual.[16]

Pennsylvania's corruption of minors statute serves to protect young girls from both physical and emotional harm, even when the sexual conduct engaged in is purportedly consensual in nature. In Commonwealth v. Decker, 698 A.2d 99, 100 (Pa. Super. Ct. 1997), a 37-year old defendant argued that he should not have been found guilty of corruption of minors where his 15-year old partner consented. The Court rejected this argument, finding that "consent is not an element in a corruption of minors charge" and that "sexual behavior was the corrupting activity to be prevented." Id. at 100. The court noted that the "purpose of such statutes is basically protective in nature … to safeguard the welfare and security of our children." Id. at 101. Moreover, the Court explained: "It requires no stretch of reason to understand that an immature female can easily be seduced or mentally overpowered by an adult to engage in a large range of activity, the consequences of which she neither understands nor of which she is capable

[16] Such potential consequences include pregnancy and contraction of sexually-transmitted diseases. Pregnancy presents a particular risk for younger women, who face a considerably higher risk of pregnancy complications. See Robert Miller, Preventing Adolescent Pregnancy and Associated Risks, 41 Can. Fam. Physician 1525, 1528 (1995) (noting that pregnant adolescents experience complications, including pregnancy-induced hypertension, premature labor, and anemia, at rates higher than older women) (attached as Ex. 5); R. Rivera et al., Contraception for Adolescents: Social, Clinical and Service Delivery Considerations, 75 Int'l J. Gynec. & Obstet. 149, 150 (2001) (women aged 15-19 are especially likely to suffer from pre-eclampsia, eclampsia, and obstructed labor) (attached as Ex. 6). Additionally, younger women are particularly susceptible to certain sexually-transmitted diseases from intercourse. See Marcia L. Shew et al., Interval Between Menarche and First Sexual Intercourse, Related to Risk of Human Papillomavirus Infection, 125 J. Pediatrics 661, 661 (1994) (noting prior studies identifying earlier age at first sexual intercourse as risk marker for human papillomavirus infection, cervical intraepithelial neoplasia, and cervical cancer) (attached as Ex. 7); Amahuaro A. Edebiri, Cervical Intraepithelial Neoplasia: The Role of Age at First Coitus in Its Etiology, 35 J. Reprod. Med. 256, 257 (1990) (finding increased risk of development of cervical intraepithelial neoplasia, a potential precursor to cervical cancer, in women who first engage in intercourse before age 18) (attached as Ex. 8).

of dealing and which can have long-range, if not permanent, adverse effects." Id. at 102.[17] Given the seriousness of Plaintiff's offense, there is no basis for distinguishing Plaintiff from "persons historically barred from Second Amendment protections." Barton, 633 F.3d at 174.

Indeed, the Third Circuit recently upheld a determination by this Court that a Second Amendment challenge to Section 922(g)(1), as applied to an offender convicted of first-degree misdemeanors under Pennsylvania law whose crimes were allegedly non-violent in nature, would fail. Dutton v. Commonwealth, 2012 WL 3020651 (E.D. Pa. July 23, 2012), aff'd, 503 F. App'x 125 (3d Cir. 2012) (per curiam). The plaintiff in Dutton had been convicted in 1995 of carrying a firearm on a public street and carrying without a license, both first-degree misdemeanors under Pennsylvania law. 2012 WL 3020651, at *1. Citing Barton, this Court determined that if the plaintiff had challenged the constitutionality of Section 922(g)(1) as applied to him, "the Court would have found the claim lacked merit." Id. at *2 n.3. The Third Circuit affirmed, stating: "[T]he Barton court determined that § 922(g)(1) is constitutional as applied to an individual, like Dutton, who has 'presented no facts distinguishing his

[17] There are "various factors that make teenage girls susceptible to coercion and abuse in sexual encounters." Michelle Oberman, Regulating Consensual Sex with Minors: Defining a Role for Statutory Rape, 48 Buff. L. Rev. 703, 709 (2000). The "vulnerability inherent in adolescence, including severely diminished self-esteem, ambivalence about one's changing body, and a marked reluctance to assert one's self, leads teenagers to consent to sexual contact that may not be fully, or even partially desired." Id.; see also id. at 710 ("Because of their inexperience [teenagers] are necessarily prone to misjudgment. Nowhere is this tendency toward misjudgment more pernicious than in the area of sexuality, in which adolescents' age-appropriate naivete renders them uniquely susceptible to coercion and abuse."). Moreover, "the potential for coercion and exploitation increases as the differences in ages between the parties increases. . . ." Rigel Oliveri, Statutory Rape Law and Enforcement in the Wake of Welfare Reform, 52 Stan. L. Rev. 463, 507 (2000); see also Oberman, 48 Buff. L. Rev. at 751 ("All else being equal, the greater the age gap between the parties to a sexual encounter, the greater the risk of a significant power disparity between the parties."). Here, the age difference was 24 years, and Plaintiff was the victim's employer.

circumstances from those of other felons who are categorically unprotected by the Second Amendment.'" 503 F. App'x at 127 n.1 (quoting Barton, 633 F.3d at 175).[18]

And to the extent that Plaintiff implies that his conviction is not serious enough to fall within the purview of Section 922(g)(1) because the Commonwealth happens to label it a misdemeanor is not borne out by the Gun Control Act's legislative history. Senate Report 90-1501 initially made it unlawful for a "*felon*, fugitive, or one under indictment to receive a firearm or ammunition which has been shipped or transported in interstate or foreign commerce." S. Rep. No. 90-1501 (1968) at 35 (emphasis added). "Felony" was defined as "a Federal crime punishable by a term of imprisonment exceeding 1 year and in the case of State law, an offense determined by the laws of the State to be a felony." Id. at 31. However, "the Conference Committee ultimately rejected this version in favor of language that speaks of those 'convicted in any court of, *a crime punishable by a term of imprisonment exceeding one year*.'" Small, 544 U.S. at 393, 125 S.Ct. at 1757 (quoting H.R. Conf. Rep. No. 90-1956 (1968), at 28-29, *reprinted in* 1968 U.S.C.C.A.N. 4426, 4428) (emphasis added). The conference report noted:

> Both the House bill and the Senate amendment prohibited the shipment, transportation, and receipt or firearms and ammunition by persons under indictment for, or convicted of, certain crimes. . . . A difference between the House bill and the Senate amendment which recurs in the provisions described above is that the crime referred to in the House bill is one punishable by imprisonment for more than 1 year and the crime referred to in the Senate amendment is a crime of violence punishable as a felony. . . . The conference substitute adopts the crime referred to in the House bill.

[18] This Court's and the Third Circuit's statements on this issue were not dicta because the statements were necessary to the courts' determination that granting the plaintiff leave to amend his complaint would be futile. See 2012 WL 3020651, at *3 (concluding that any amendment would be futile because any constitutional challenge to Section 922(g)(1) would lack merit); 503 F. App'x at 127 n.2 (concluding that this Court did not err in declining to permit such amendment).

H.R. Conf. Rep. No. 90-1956, at 28-29. Congress thus specifically considered, and rejected, applying Section 922(g)(1)'s prohibition only to certain crimes labeled by States as felonies. "[T]he enacted version is simpler and it avoids potential difficulties arising out of the fact that States may define the term 'felony' differently." Small, 544 U.S. at 393, 125 S.Ct. at 1757.

Thus, in enacting Section 922(g)(1), Congress found that the misuse of firearms by persons convicted of serious crimes – whether labeled misdemeanors or felonies by the State in which the crime occurred – is a significant problem and that restricting the firearms possession of persons who have already been convicted of such offenses would help reduce the risk of gun violence. Omnibus Crime Control and Safe Streets Act of 1968, Pub. L. No. 90-351, § 1201, 82 Stat. 236; S. Rep. No. 89-1866, at 1, 53 (1966); S. Rep. No. 88-1340, at 4 (1964). Congress's "predictive judgments" about the risk of firearms misuse by individuals who have been convicted of serious offenses are entitled to deference, because Congress is best positioned to formulate appropriate firearms policy in order to further the goal of public safety. Cf. Turner Broad. Sys., 512 U.S. at 665-66, 114 S.Ct. at 2471 (in applying intermediate scrutiny under the First Amendment, courts should accord substantial deference to Congress's predictive judgments). Congress's findings apply to serious offenses such as that committed by Plaintiff. The mere fact that an offense is characterized as a first-degree "misdemeanor" does not suggest that it is a minor offense. See Tennessee v. Garner, 471 U.S. 1, 14, 105 S.Ct. 1694, 1703, 85 L.Ed.2d 1 (1985) (explaining that the distinction between misdemeanors and felonies is "minor and often arbitrary," as today "numerous misdemeanors involve conduct more dangerous than many felonies"). Indeed, the maximum statutory penalty imposed by Pennsylvania for a first-

degree misdemeanor (5 years) is comparable to that imposed for a third-degree felony (7 years). See 18 Pa.C.S.A. §§ 1103, 1104.[19]

In short, the government's conclusion that individuals convicted of crimes such as Plaintiff's should not be permitted to possess firearms is undoubtedly a reasonable one, and Plaintiff cannot demonstrate that he is fundamentally different from other persons historically barred from Second Amendment protections. There is thus a reasonable fit between Section 922(g)(1), as applied to Plaintiff, and the indisputably important government interest in protecting public safety and reducing crime, and courts have repeatedly upheld the statute as applied to persons such as Plaintiff. It therefore satisfies the requirements of intermediate scrutiny analysis.

CONCLUSION

Because Plaintiff's conviction was punishable by a term of imprisonment exceeding two years, he falls within the scope of 18 U.S.C. § 922(g)(1). Furthermore, the law Plaintiff challenges does not preclude conduct that is protected by the Second Amendment and would pass constitutional muster in any event. Accordingly, the Court should dismiss this case or enter summary judgment for Defendants.

[19] Nor, finally, is the fact that Plaintiff was convicted in 1997 of any legal significance here. See Dutton, 503 F. App'x at 127 n.2 (upholding decision denying as futile leave to amend complaint to assert Second Amendment challenge to Section 922(g)(1) as applied to offender convicted of first-degree misdemeanors in 1995); United States v. Oppedisano, 2010 WL 4961663, at *3 (E.D.N.Y. Nov. 30, 2010) (rejecting as-applied challenge to Section 922(g)(1) by defendant convicted of first-degree reckless endangerment in 1993 and driving while intoxicated in 1994); United States v. Jones, 673 F. Supp. 2d 1347, 1352 (N.D. Ga. 2009) (rejecting as-applied challenge to Section 922(g)(1) by defendant convicted in 1995 of possession of cocaine and first-degree reckless injury while armed).

Dated: February 20, 2014

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on this 20th day of February, 2014, I caused the foregoing documents to be served via e-mail and via electronic case filing, as follows:

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IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF PENNSYLVANIA

DANIEL BINDERUP,	)	
	)	
Plaintiff,	)	
v.	)	
	)	**Case No. 5:13-cv-06750-JKG**
ERIC H. HOLDER, JR.,	)	
Attorney General of the	)	
United States et al.,	)	
	)	
Defendants.	)	
_____	)	

ORDER

NOW, this ____ day of _____, 2014, upon consideration of Defendants' Motion to Dismiss or for Summary Judgment filed on February 20, 2014, and the Court having considered any opposition thereto,

IT IS ORDERED that the motion is granted, and the Complaint is dismissed with prejudice.

BY THE COURT:

_____
James Knoll Gardner
United States District Judge

LIST OF EXHIBITS

1. Police Criminal Complaint, Commonwealth of Pennsylvania v. Binderup, Crim. No. 4127-1997 (Lancaster County Court of Common Pleas) (redacted)

2. Sentencing Order and Guilty Plea, Commonwealth of Pennsylvania v. Binderup, No. 4127-1997 (Lancaster County Court of Common Pleas) (redacted)

3. Bureau of Justice Statistics Fact Sheet, Profile of Nonviolent Offenders Exiting State Prisons (Oct. 2004)

4. Mona A. Wright et al., Effectiveness of Denial of Handgun Purchase to Persons Believed to Be at High Risk for Firearm Violence, 89 Am. J. of Public Health 88 (1999)

5. Robert Miller, Preventing Adolescent Pregnancy and Associated Risks, 41 Can. Fam. Physician 1525 (1995)

6. R. Rivera et al., Contraception for Adolescents: Social, Clinical and Service Delivery Considerations, 75 Int'l J. Gynec. & Obstet. 149 (2001)

7. Marcia L. Shew et al., Interval Between Menarche and First Sexual Intercourse, Related to Risk of Human Papillomavirus Infection, 125 J. Pediatrics 661 (1994)

8. Amahuaro A. Edebiri, Cervical Intraepithelial Neoplasia: The Role of Age at First Coitus in Its Etiology, 35 J. Reprod. Med. 256 (1990)

EXHIBIT
1

ORIGINAL

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF: Lancaster

POLICE CRIMINAL COMPLAINT

Magisterial District Number: 02-2-05

District Justice Name: Hon. David Brian

Address: 399 Camp Meeting Road
Landisville, PA 17538

Telephone: (717) 898-2511

COMMONWEALTH OF PENNSYLVANIA

VS. 4127-1997

DEFENDANT:

NAME and ADDRESS

Daniel Richard Binderup
[redacted]

Docket No.: CR-195-97

Date Filed: 9/30/97

OTN: F125232-2

Defendant's Race/Ethnicity	Defendant's Sex	Defendant's D.O.B.	Defendant's Social Security Number	Defendant's SID
☑ White ☐ Asian ☐ Black ☐ Hispanic ☐ Native American ☐ Unknown	☐ Female ☑ Male	[redacted]	[redacted]	

Defendant's A.K.A.	Defendant's Vehicle Information: Plate Number	State	Registration Sticker(MM/YY)	Defendant's Driver's License Number / State	UCR/NIBRS Code

Complaint/Incident Number: 97013849

Complaint/Incident Numbers if other Participants:

District Attorney's Office ☐ Approved ☐ Disapproved because:

(The district attorney may require that the complaint, arrest warrant affidavit, or both be approved by the attorney for the Commonwealth prior to filing. Pa.R.Cr.P. 107.)

(Name of Attorney for Commonwealth - Please Print or Type) (Signature of Attorney for Commonwealth) (Date)

I, Det. Allen Leed (Name of Affiant - Please Print or Type) SP6 (Officer Badge Number/I.D.)

of Manheim Township Police Department (Identify Department or Agency Represented and Political Subdivision) PA 0360800 (Police Agency ORI Number) (Originating Agency Case Number (OCA))

do hereby state: (check the appropriate box)

1. ☒ I accuse the above named defendant who lives at the address set forth above
   ☐ I accuse the defendant whose name is unknown to me but who is described as

   ☐ I accuse the defendant whose name and popular designation or nickname is unknown to me and whom I have therefore designated as John Doe

   with violating the penal laws of the Commonwealth of Pennsylvania at Binderup's Bake Shop 2027 Miller Rd (Place-Political Subdivision)
   East Petersburg, And [redacted] East Petersburg, PA
   in Lancaster County on or about diverse times & dates between June 1996 & August 1997

   Participants were: (if there were participants, place their names here, repeating the name of above defendant)

2. The acts committed by the accused were:
   (Set forth a summary of the facts sufficient to advise the defendant of the nature of the offense charged. A citation to the statute allegedly violated, without more, is not sufficient. In a summary case, you must cite the specific section and subsection of the statute or ordinance allegedly violated.)

   Corruption of Minors (m-1)

kh

(Continuation of No. 2)

ORIGINAL

Defendant's Name:	Daniel Binderup
Docket Number:	CR-195-97

POLICE CRIMINAL COMPLAINT

Corruption of Minors

The actor, being of the age of 18 years and upwards, by an act, corrupted, or tended to corrupt the morals of a minor, less than 18 years of age, or who aided, abetted, enticed or encouraged the minor in the commission of any crime, or who knowingly assisted or encouraged such minor in violating his or her parole or any order of court, to wit: actor, during the ages of 41 & 42, had indecent contact and sexual intercourse with [redacted] while she was 17 years old. The incidents occurred at Binderup's Bake Shop 2027 Miller Road, East Petersburg, PA and [redacted] residence - [redacted] East Petersburg, PA. The time period of occurrences was between June 1996 and August 1997.

all of which were against the peace and dignity of the Commonwealth of Pennsylvania and contrary to the Act of Assembly, or in violation of

1.	6301 (Section)	a (Subsection)	of the	PA Crimes Code (PA Statute)	1 (counts)
2.	(Section)	(Subsection)	of the	(PA Statute)	(counts)
3.	(Section)	(Subsection)	of the	(PA Statute)	(counts)
4.	(Section)	(Subsection)	of the	(PA Statute)	(counts)

3. I ask that a warrant of arrest or a summons be issued and that the defendant be required to answer the charges I have made. **(In order for a warrant of arrest to issue, the attached affidavit of probable cause must be completed and sworn to before the issuing authority.)**

4. I verify that the facts set forth in this complaint are true and correct to the best of my knowledge or information and belief. This verification is made subject to the penalties of Section 4904 of the Crimes Code (18 PA. C.S. § 4904) relating to unsworn falsification to authorities.

Sep. 30, 19 97 — Det. [illegible] (Signature of Affiant)

AND NOW, on this date SEPTEMBER 30, 19 97, I certify that the complaint has been properly completed and verified. An affidavit of probable cause must be completed in order for a warrant to issue.

[illegible] SEAL

02-2-05

ORIGINAL

Defendant's Name: Daniel Binderup

Docket Number: CR195-97

POLICE
CRIMINAL COMPLAINT

AFFIDAVIT of PROBABLE CAUSE

1. On September 12, 1997, [redacted] reported to the Manheim Township Police Department that the time period from the summer of 1996 up until August 1997 she was having sexual relations with Daniel Binderup, her employer at Binderup's Bake Shop. She reported that they had sexual intercourse on many occasions at the Bake Shop and at his home. She also reported that she masturbated Binderup on many occasions at his request at the Bake Shop, her home, and also his home during this time period.
2. [redacted] reported that these incidents began sometime around June 1996 when she was 17 years old. She said that they continued up until August 1997. [redacted]'s birthdate is [redacted]. She reported that Binderup's age is 42.
3. On September 14, 1997, Det. Allen Leed interviewed Daniel Binderup. Binderup told Leed that his birthdate is [redacted] Binderup admitted to Det. Leed that he did have sexual intercourse on many occasions with [redacted] at his bake shop and also his home. He also admitted that she masturbated him many times at the Bake Shop, her home, and his home. He admitted that he knew that she was under the age of 18.
4. Binderup's Bake Shop is located at 2027 Miller Road, East Petersburg, PA. [redacted]'s home is located at [redacted], East Petersburg, PA
5. Based upon the above set of facts and circumstances, this affiant is requesting that Daniel Binderup be made to answer the attached criminal complaint charging him with Corruption of Minors.

I, DET. ALLEN LEED, **BEING DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT THE FACTS SET FORTH IN THE FOREGOING AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.**

Det. Allen Leed
(Signature of Affiant)

Sworn to me and subscribed before me this 30TH day of SEPTEMBER, 19 97.

9/30/97 Date _____, District Justice

My commission expires first Monday of January, 2000.

SEAL

EXHIBIT
2

SENTENCING ORDER

Dkt. No. 4127-1997 OTN F125232-2

Defendant DANIEL RICHARD BINDERUP

Offenses Corr. of Mnrs mi

G.P. X St.____ Plea Agree. X Mod.____

Nolo____ N/Pros.____ ARD____ Sentencing____

Re-sent____ Sum. Appeal____ Other____

Date 7/15/98

Judge Allison

D.A. Ellison

Def. Atty. S. Mecum

Reporter Adams

Clerk Reed

COUNT: OFFENSE Corr of minors mi Nol Pros____ Merges with____

Committed:____yr____mo____days____hrs TO____yr____mo____days

☐ Mandatory Sentence Probation/~~ARD~~ 3 yr____mo____days SERVE AT LCP____ SCI____

Intermediate Punishment Program____ **see additional sheet

☐ Split Sentence FINE 300 & Costs CONC (cc)____

RESTITUTION____ CONS (cs)____

COUNT: OFFENSE____ Nol Pros____ Merges with____

Committed:____yr____mo____days____hrs TO____yr____mo____days

☐ Mandatory Sentence Probation/ARD____yr____mo____days SERVE AT LCP____ SCI____

Intermediate Punishment Program____ **see additional sheet

☐ Split Sentence FINE____ & Costs CONC (cc)____

RESTITUTION____ CONS (cs)____

COUNT: OFFENSE____ Nol Pros____ Merges with____

Committed:____yr____mo____days____hrs TO____yr____mo____days

☐ Mandatory Sentence Probation/ARD____yr____mo____days SERVE AT LCP____ SCI____

Intermediate Punishment Program____ **see additional sheet

☐ Split Sentence FINE____ & Costs CONC (cc)____

RESTITUTION____ CONS (cs)____

COUNT: OFFENSE____ Nol Pros____ Merges with____

Committed:____yr____mo____days____hrs TO____yr____mo____days

☐ Mandatory Sentence Probation/ARD____yr____mo____days SERVE AT LCP____ SCI____

Intermediate Punishment Program____ **see additional sheet

☐ Split Sentence FINE____ & Costs CONC (cc)____

RESTITUTION____ CONS (cs)____

____ Impaired Driver Program

____ ACT 122 Treatment Imposed

____ Motor Vehicle essentially involved

____ Drug & Alcohol Eval/Treatment

X Eval. for Spec. Offender Svc./Psych. Eval./Treat.

____ Community Service ____ hours

____ Pay within ____yr 18 mo ____days

X Restitution to be paid first

* No contac w/ victim

____ Credit for time served ____

(Subject to verification)

____ Sent. Deferred to: Date____ Time____

____ Work Release Approved____

____ Parole w/o Pet. Subj. to Beh.____

____ House Arrest/Elect. Mont.____

____ Eligible for BOOT CAMP

BY THE COURT:

____ J.

Prepared by: D. Reed
Clerk

PLEA AGREEMENT

The subscribing parties certify that the following facts are accurate and the plea agreement to be voluntarily and intelligently executed with full knowledge of the maximum possible sentences:

DEFENDANT Daniel Richard Bindrup

TERM & NUMBER	OFFENSES	PLEA (GUILTY OR NOL PROS)
1. 4127-97	Corruption of Minors M-1	Guilty
2.		
3.		
4.		
5.		

AGREED SENTENCE

OFFENSE	JAIL (a)	PROBATION (b)	DEFENDANT TO PAY (c) FINE	COSTS	REST.
1.		3 years	$300	yes	yes
2.					
3.					
4.					
5.					

SENTENCES TO BE: CONSECUTIVE ______ CONCURRENT ______

(a) Condition(s) of Parole ______

(b) Condition(s) of Probation No contact with the victim [redacted] Counseling as deemed necessary

(c) Fine(s), costs, restitution to be fully paid within 18 months.
Payments to be applied to restitution first? yes

DATE SIGNED 7/15/98 DEFENDANT Daniel Bindrup

DEFENSE COUNSEL [signature]

Asst DISTRICT ATTORNEY [signature]

PRESENTED TO JUDGE ______ ON ______

ACCEPTED ______ REJECTED ______

No. 4127 Term 19 97

Guilty Plea

Commonwealth

vs.

Daniel Richard Bradley
(Defendant)

Corruption of Minors H.1
(Offense)

.....

.....

.....

I, defendant within named, in the presence of my counsel, do hereby enter my plea of guilty to the within information. Further, being advised of the offense charged in the information and of my rights, hereby (in open court) consent to proceed on the within information presented by the attorney for the Commonwealth.

Daniel Bradley
(Defendant)

Dated: 7/15/98

Counsel S.M. MECUM

IN THE COURT OF COMMON PLEAS OF LANCASTER COUNTY, PENNSYLVANIA

CRIMINAL

COMMONWEALTH OF PENNSYLVANIA :

vs. : CRIMINAL NO. 4127-1997

DANIEL RICHARD BINDERUP :

INSTRUCTIONS

1. Use this form for all probationary sentences based on a plea agreement and all offenses graded felony of the third degree and misdemeanors of the first, second and third degree, whether or not based on a plea agreement.

2. The Court will explain the elements of the crimes to which you are pleading guilty and the possible range of sentences and fines.

3. Complete the answer to every question.

4. Be sure to sign and date the form on page two.

GUILTY PLEA COLLOQUY

You are present before this Court because you or your lawyer have stated that you wish to plead guilty to some or all of the criminal offenses with which you have been charged.

1. Can you read, write, speak and understand the English language? YES

2. Are you in any way under the influence of alcohol or drugs? NO

3. Do you understand that you are here today to enter a plea of guilty to some or all of the criminal charges against you? YES

4. Do you understand that you have a right to a trial by jury and by pleading guilty you are giving up that right? YES

5. Do you understand that a jury would consist of twelve citizens from Lancaster County, that you and your attorney would participate in the selection of the jury and that in order to convict you, all twelve members of the jury must agree that you are guilty? YES

6. Do you understand that you are presumed innocent until proven guilty by the Commonwealth beyond a reasonable doubt? YES

7. Do you understand that the Commonwealth must prove each element of each crime beyond a reasonable doubt? YES

8. Have you, your lawyer and the District Attorney entered into any negotiated plea agreement? YES

9. If the answer to 8 is "yes", do you understand that the judge can reject the plea agreement? YES

10. Do you understand that if the judge rejects the plea agreement you will be permitted to withdraw your guilty plea and you will be in the same position as if no agreement had ever taken place? YES

11. Do you understand the terms of the plea agreement? YES

12. Is it your decision to plead guilty? YES

13. Have you been threatened or forced to plead guilty? NO

14. Have any promises been made to you to enter a plea of guilty other than the terms of any plea agreement? NO

15. Do you understand that a guilty plea has the same effect as a conviction by a jury or a judge hearing the case without a jury? YES

I am voluntarily pleading guilty and signing this Guilty Plea Colloquy.

7/15/98
Date

Daina Bundy
Defendant

I have reviewed this Guilty Plea Colloquy and the answers with my client.

Attorney for Defendant

IN THE COURT OF COMMON PLEAS OF LANCASTER COUNTY, PENNSYLVANIA--CRIMINAL

COMMONWEALTH OF PENNSYLVANIA

Vs. Criminal Action No 4127 -1997

Daniel R. Binderup

The District Attorney of Lancaster County, by this information charges that on (or about) June 1996 between August 1997, in said Lancaster County, Daniel R. Binderup

(who at all times hereafter shall be referred to and called by the name of actor)

Count 1-

being the age of 18 years and upwards, by any act corrupts or tends to corrupt the morals of any minor less than 18 years of age, or who aids, abets, entices or encourages any such minor in the commission of any crime, to wit: actor, during the ages 41 and 42, had indecent contact and sexual intercourse with [redacted] while she was 17 years old, said act hereby corrupting the morals of this minor child and occurring at Binderup's Bake Shop, and 2027 Miller Road and [redacted] East Petersburg, PA

All of which is against the Act of Assembly and the peace and dignity of the Commonwealth of Pennsylvania.

District Attorney

HE/lf

Date 1-8-98

Information No. 4127-1997
Commonwealth of Pennsylvania

CITATION OF STATUTE/S AND SECTIONS
Corruption of Minors 18 PS 6301 (a-1) M1

vs.
Daniel R. Binderup

Commonwealth's Witnesses:
Det. Allen Leed, MTPD, (Pros)
[redacted] E. Petersburg, PA 17520

EXHIBIT
3

U.S. Department of Justice
Office of Justice Programs

Bureau of Justice Statistics Fact Sheet

October 2004, NCJ 207081

Profile of Nonviolent Offenders Exiting State Prisons

Tables prepared by
Matthew R. Durose, *BJS Statistician*
Christopher J. Mumola, *BJS Policy Analyst*

This report provides a description of the general characteristics of prison populations serving time for nonviolent crimes as they exit State prisons. Nonviolent crimes are defined as property, drug, and public order offenses which do not involve a threat of harm or an actual attack upon a victim. Typically, the most frequently identified nonviolent crimes involve drug trafficking, drug possession, burglary, and larceny.

To conduct this analysis, BJS utilized data collected under two statistical programs — the National Recidivism Reporting Program which last collected data on those discharged from prisons in 15 States in 1994 and the Survey of Inmates in State Correctional Facilities last conducted in 1997. The survey was based on a nationally representative sample of inmates. This report examines the responses of inmates who indicated to interviewers that they expected to be released within 6 months.

Offense Characteristics of Nonviolent Prison Releasees

• About 3 out of 4 inmates leaving State prisons had been convicted of a nonviolent crime (table 1). Property offenders and drug offenders each accounted for about a third of those exiting prisons.

• The single largest offense category of nonviolent offenders discharged from prisons was drug trafficking, accounting for nearly 1 in 5 nonviolent releasees (table 2).

Demographic Characteristics of Nonviolent Prison Releasees

• An estimated 9 of 10 nonviolent offenders discharged from prison were male and about two-thirds were under age 34 (tables 3, 4).

• Overall, about two-thirds of nonviolent releasees were racial or ethnic minorities.

• Just over 4 in 10 released nonviolent prisoners had less than a high school education and an additional 1 in 4 had received a GED.

• Nearly two-thirds of nonviolent offenders discharged from prisons indicated they had been using illegal drugs in the month preceding the commitment offense and about 4 in 10 reported using drugs at the time of the offense (table 5).

• About 1 in 4 nonviolent releasees were alcohol dependent prior to imprisonment, and a third were using alcohol at the time of the offense.

Criminal History Characteristics of Nonviolent Prison Releasees

• An estimated 95% of nonviolent releasees had an arrest history preceding the arrest which resulted in their imprisonment (table 6).

• More than 80% of those nonviolent offenders released from prison have a prior conviction history.

• On average, the RAP sheets of nonviolent offenders discharged from prison indicated 9.3 prior arrests and 4.1 prior convictions.

• Among nonviolent offenders, about a third had a history of arrests for violent crimes. One in five had a self-reported history of convictions for violence (table 7).

• On average, nonviolent offenders discharged had received a sentence of about 52 months and had served an average of 16 months, about a third of their sentence, prior to discharge (table 8).

• About 8% of nonviolent offenders used a weapon during the current offense (table 9).

• In the aggregate, nonviolent offenders awaiting release from prison were largely serious offenders as indicated by several criteria. An estimated 88% of these offenders reported one of the following:
  — use of a weapon in the current offense (8%)
  — a prior violent conviction (22%)
  — committing the current offense while on probation, parole, or escape (64%)
  — two or more prior sentences (65%).

Recidivism of Nonviolent Prison Releasees

• Within 3 years of their release from prison, about 7 in 10 nonviolent releasees were rearrested for a new crime; nearly half were reconvicted; and more than a quarter were returned to prison (table 10).

• Among nonviolent releasees, about 1 in 5 were rearrested for a violent crime within 3 years of discharge (table 11).

Table 1. Offenders released in 1994 from prisons in 15 States

Offense for which inmate was serving a sentence	Released offenders	
	Number	Percent
All offenses	272,111	100%
Violent offenses	61,225	22.5%
Nonviolent offenses	210,886	77.5%
Property offenses	91,157	33.5
Drug offenses	88,708	32.6
Public-order offenses	26,395	9.7
Other offenses	4,626	1.7

Source: BJS, *Recidivism of Prisoners Released in 1994.*

Table 2. Current offense of nonviolent offenders expecting release from State prison, 1997

Current nonviolent offense	Percent of nonviolent State prisoners expecting release within 6 months
Property offenses	40.6%
Burglary	15.0
Larceny	10.1
Auto theft	3.6
Arson	1.0
Fraud	6.2
Stolen property	3.3
Other property	1.4
Drug offenses	36.8%
Possession	17.5
Trafficking	18.3
Other drug offenses	1.0
Public-order offenses	22.5%
Weapons	4.7
Violation of probation/parole	8.4
Driving while intoxicated	4.2
Other public-order offenses	5.2

Source: BJS, *Survey of Inmates in State Correctional Facilities, 1997.*

Table 3. Characteristics of nonviolent offenders expecting release from State prison, 1997

Characteristic	Percent of nonviolent State prisoners expecting release within 6 months
Gender	
Male	88.6%
Female	11.4
Age	
24 or younger	18.9%
25-34	42.3
35-44	29.6
45-54	7.5
55 or older	1.6
Race/Hispanic origin	
White*	34.3%
Black*	45.9
Hispanic	16.9
Other*	2.9
Education	
8th grade or less	8.3%
Some high school	34.0
GED	26.2
High school graduate	17.4
Some college	14.1

*Excludes persons of Hispanic origin.

Source: BJS, *Survey of Inmates in State Correctional Facilities, 1997.*

Table 4. Profile of nonviolent offenders released in 1994 from prisons in 15 States

Characteristic	Percent of released nonviolent offenders
Total	100%
Gender	
Male	90.3%
Female	9.7
Race	
White	51.1%
Black	47.9
Other	1.0
Hispanic origin	
Hispanic	24.7%
Non-Hispanic	75.3
Age at release	
14-17	0.3%
18-24	20.1
25-29	23.0
30-34	23.4
35-39	16.5
40-44	9.4
45 or older	7.3

Source: BJS, *Recidivism of Prisoners Released in 1994.*

Table 6. Prior criminal record of nonviolent offenders released in 1994 from prisons in 15 States

Prior to the nonviolent offense for which the offender had served time and was released from State prison	
Prior arrest	
Percent with at least 1 prior arrest for —	
Any crime	94.5%
Any violent crime	31.4%
Mean number of prior arrests	9.3
Median number	7.0
Prior conviction	
Percent with at least 1 prior conviction for —	
Any crime	84.3%
Any violent crime	10.2%
Mean number of prior convictions	4.1
Median number	3.0
Percent with at least 1 prior prison sentence	46.2%

Source: BJS, *Recidivism of Prisoners Released in 1994.*

Table 5. Drug and alcohol abuse of nonviolent offenders expecting release from State prison, 1997

	Percent of nonviolent State prisoners expecting release within 6 months
Drugs	
Used drugs	
In the month before the offense	62.2%
At time of the offense	36.8
Alcohol	
Reported indicators of alcohol dependence	26.7%
Used alcohol at time of the offense	33.5
Used either alcohol or drugs at time of offense	55.1%

Source: BJS, *Survey of Inmates in State Correctional Facilities, 1997.*

Table 7. Criminal history of nonviolent offenders expecting release from State prison, 1997

	Percent of nonviolent State prisoners expecting release within 6 months
Criminal history	
Prior convictions	
At least 1 violent	22.2%
None violent	59.0
No prior convictions	18.8
Number of prior sentences to incarceration or probation	
0	18.9%
1	15.7
2	15.3
3	27.4
4	14.4
5 or more	8.3

Source: BJS, *Survey of Inmates in State Correctional Facilities, 1997.*

Table 8. Sentence and time served of nonviolent offenders released in 1994 from prisons in 15 States

Characteristic of prison sentence	Percent of released nonviolent offenders
Sentence length	
Mean	51.6 months
Median	39.2
Time served before release	
Mean	16.1 months
Median	11.3
Percent of sentence served before release	33.4%
Number of released nonviolent offenders	210,886

Source: BJS, *Recidivism of Prisoners Released in 1994.*

Table 9. "Serious offender" indicators of nonviolent offenders expecting release from State prison, by type of current offense, 1997

Type of current offense	Percent of nonviolent State prisoners expecting release within 6 months: Used weapon in current offense	Prior violent conviction	On probation/ parole/escape at time of offense	Multiple prior sentences	Any "serious offender" indicator
All nonviolent offenses	8.4%	22.2%	63.6%	65.4%	88.4%
Property offenses	3.4	22.8	65.8	66.8	88.2
Drug offenses	7.6	19.0	58.7	61.1	82.2
Public-order offenses	19.5	26.5	67.5	70.0	100.0

Source: BJS, *Survey of Inmates in State Correctional Facilities, 1997.*

Table 10. Recidivism rates of nonviolent offenders released in 1994 from prisons in 15 States, by time after release

Time after release	Cumulative percent of released nonviolent offenders who were — Rearrested	Reconvicted	Returned to prison with new sentence
6 months	31.1%	11.1%	5.3%
1 year	45.8	22.9	11.1
2 years	61.0	38.4	19.9
3 years	69.1	48.4	26.7

Source: BJS, *Recidivism of Prisoners Released in 1994.*

Table 11. Rearrest rates of the 210,886 nonviolent offenders released in 1994 from prisons in 15 States, by charge at rearrest

Rearrest charge	Percent rearrested within 3 years
All charges	69.1%
Violent offenses	19.9
Property offenses	33.7
Drug offenses	32.6
Public-order offenses	28.6

Note: Percentages do not sum to 100 because some offenders were rearrested for more than one type of offense.

Source: BJS, *Recidivism of Prisoners Released in 1994.*

EXHIBIT 4

Effectiveness of Denial of Handgun Purchase to Persons Believed to Be at High Risk for Firearm Violence

Mona A. Wright, MPH, Garen J. Wintemute, MD, MPH, and Frederick P. Rivara, MD, MPH

ABSTRACT

Objectives. The purpose of this study was to determine whether denial of handgun purchase is an effective violence prevention strategy.

Methods. Individuals denied handgun purchase because of a prior felony conviction and handgun purchasers with a felony arrest at time of purchase were examined.

Results. Relative to those denied purchase, handgun purchasers were found to be at greater risk for subsequent offenses involving a gun (relative risk [RR] = 1.21, 95% confidence interval [CI] = 1.08, 1.36) or violence (RR = 1.24, 95% CI = 1.11, 1.39), after adjustment for number of prepurchase weapon/violence charges.

Conclusions. Denial of handgun purchase to persons with a prior felony conviction may lower their rate of subsequent criminal activity. (*Am J Public Health.* 1999;89:88–90)

There were an estimated 1.2 million firearm-related violent crimes in the United States in 1995, more than 80% of which involved handguns.[1–3]

One measure to prevent firearm-related crime would prohibit handgun purchase by individuals thought to be at high risk for such crimes: convicted felons and persons under active felony indictment.[4,5] Criminal record background checks now prevent handgun purchases by nearly 80 000 prohibited persons each year.[6,7] No evaluation of denial of handgun purchase as a crime prevention measure has been conducted.

We report the results of a cohort study of criminal activity among 2 groups of persons attempting to purchase handguns in California in 1977. The first group's handgun purchases were denied as a result of a prior felony conviction. The second group's purchases were approved; members of this group had prior felony arrests but no felony convictions. We hypothesized that the risk for subsequent criminal activity would be lower for those whose handgun purchases were denied than for those whose purchases were approved.

Methods

All data for this study were obtained from the California Department of Justice.

We defined exposure as the purchase of a handgun. Our purchaser cohort consisted of 2470 individuals who had a prior felony arrest but no felony conviction and who purchased a handgun after passing a background check in 1977. (A felony is a crime punishable by death or incarceration in prison.[8]) This cohort was identified from an equal probability sample, drawn from a registry of approved handgun sales, of 4276 purchasers with prior criminal records (subjects of a larger study).[9]

No registry of denied handgun purchase applications was available; 273 potential subjects were identified by a manual search of more than 115 000 purchase application forms. No criminal records were available for 82 of these individuals (30%)—50 with no criminal record, 28 with unavailable records, and 4 without explanation. Fourteen had no felony convictions, and 7 appeared on the registry of approved sales. The final cohort consisted of 170 individuals.

Arrest charges (charges filed at the time of arrest) for new offenses occurring in the 3 years following handgun purchase were the outcomes of interest. Relative risks were calculated via the Mantel–Haenszel method. Percentage of attributable risk was calculated as the difference of incidence rates divided by rate of new criminal activity among the purchasers.[10]

Results

Men predominated in both the purchaser (93%) and denied (94%) cohorts. Purchasers were younger than those denied (mean age: 32.5 ± 9.4 years vs 35.4 ± 10.5 years). Race/ethnicity distributions were similar (purchasers: 58% White, 19% Black, 19% Hispanic; those denied purchase: 56% White, 26% Black, 14% Hispanic).

Prior to handgun purchase, the 2470 members of the purchaser cohort had accumulated 14 192 arrest charges (mean: 5.7 ± 6.2; range: 1–90) and 6227 misdemeanor convictions (mean: 2.5 ± 3.2; range: 1–33). One third of charges were felonies; 21% of charges and 16% of convictions involved a weapon or violence.

The 170 members of the denied cohort had amassed 1869 prior arrest charges (mean: 11.0 ± 14.5; range: 1–107) and 815 convictions (mean: 4.8 ± 6.4; range: 1–50). Felonies constituted 38% of prior charges and 44% of convictions. Seventy-six persons (45%) had more than one felony conviction. Sixteen percent of charges and 14% of convictions involved a weapon or violence.

Over 3 years of follow-up, 31% of subjects in each cohort were arrested. Handgun

Mona A. Wright and Garen J. Wintemute are with the Violence Prevention Research Program, University of California, Davis, Sacramento. Frederick P. Rivara is with the Harborview Injury Prevention and Research Center, University of Washington, Seattle.

Requests for reprints should be sent to Mona A. Wright, MPH, Violence Prevention Research Program, UC Davis Medical Center, 2315 Stockton Blvd, Sacramento, CA 95817.

This article was accepted June 25, 1998.

Note. The contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

TABLE 1—Crude and Adjusted Relative Risks for Criminal Activity After Attempt to Purchase a Handgun, for Purchasers Relative to Persons Whose Purchases Were Denied

	Relative Risk (95% Confidence Interval)		
	Any Offense	Gun Offense	Violent Offense
Nonadjusted	1.00 (0.76, 1.32)	1.13 (0.65, 1.98)	1.16 (0.72, 1.86)
Adjusted for age at attempt to purchase	0.94 (0.92, 0.95)	1.13 (1.05, 1.21)	1.07 (1.03, 1.10)
Adjusted for no. of prior weapon/violent arrest charges	1.05 (1.04, 1.07)	1.21 (1.08, 1.36)	1.24 (1.11, 1.39)
Adjusted for no. of prior nonweapon/ nonviolent arrest charges	1.15 (1.11, 1.21)	1.27 (1.09, 1.47)	1.27 (1.12, 1.45)

purchasers accrued 1860 new arrest charges: 17% involved a firearm, 24% involved violence, 38% were felonies, and 13% were Violent Crime Index offenses (murder and nonnegligent manslaughter, forcible rape, robbery, aggravated assault[11]). Those subjects denied handgun purchase compiled 129 new arrest charges: 12% involved a gun, 19% involved violence, 57% were felonies, and 9% were Violent Crime Index offenses. Twenty percent of those denied purchase and 19% of purchasers were convicted of one or more new crimes.

The overall incidence rates for new offenses were similar (132.7 per 1000 person-years for the purchaser cohort and 132.5 per 1000 person-years for the denied cohort). Rates for new gun and violent offenses were 30.5 and 44.0 per 1000 person-years, respectively, for the purchasers and 26.9 and 38.0 per 1000 person-years for those denied.

Purchasers were at increased risk for new gun and violent offenses after adjustment for age or for number of prior arrest charges (Table 1). In a stratified analysis, risk was substantially increased for purchasers among subjects who had one prior weapon or violent arrest charge (Table 2).

We estimate that 12% of gun offense and 14% of violent offense arrests among handgun purchasers were attributable to the handgun purchase. In our study population, an estimated 25 gun offenses and 41 violent offenses might have been prevented had these purchases not occurred.

TABLE 2—Relative Risks for Criminal Activity After Attempt to Purchase a Handgun, Stratified by Characteristic Prior to Purchase, for Purchasers Relative to Persons Whose Purchases Were Denied

	Relative Risk (95% Confidence Interval)		
Characteristic	Any Offense	Gun Offense	Violent Offense
Age at attempt to purchase, y			
≤29	0.85 (0.58, 1.26)	1.35 (0.55, 3.29)	1.08 (0.55, 2.11)
≥30	1.02 (0.69, 1.51)	0.99 (0.48, 2.05)	1.05 (0.53, 2.07)
No. of prior weapon/violent arrest charges			
0	1.01 (0.63, 1.62)	0.96 (0.35, 2.64)	1.03 (0.42, 2.55)
1	1.98 (0.82, 4.81)	2.71 (0.38, 19.52)	3.94 (0.55, 28.29)
≥2	0.93 (0.64, 1.34)	1.15 (0.56, 2.36)	1.10 (0.61, 1.99)
No. of prior nonweapon/ nonviolent arrest charges			
≤3	1.09 (0.64, 1.85)	1.35 (0.43, 4.25)	2.96 (0.73, 11.96)
4–6	1.24 (0.73, 2.09)	1.63 (0.51, 5.20)	1.50 (0.61, 3.70)
≥7	1.14 (0.75, 1.73)	1.08 (0.49, 2.36)	0.87 (0.46, 1.63)

Discussion

To isolate the effect of denial of handgun purchase on subsequent risk for criminal activity, we compared handgun purchasers having a prior felony arrest with persons whose purchase was denied because of a prior felony conviction. At the time of attempt to purchase, those whose purchases were denied had, on average, nearly twice as many prior arrests and convictions as did those whose purchases were permitted. Yet, essentially equal proportions of the 2 groups were arrested for or convicted of new crimes in the 3 years following handgun purchase. The percentage of these new crimes that involved guns or violence was higher for purchasers than for those whose purchases were denied. After adjustment, purchasers were found to be at significantly greater risk for new crimes involving guns or violence.

Our findings suggest that denial of handgun purchase is associated with a reduction in risk for later criminal activity of approximately 20% to 30%. The size of this effect is comparable to that seen in other crime prevention measures, such as sentence enhancements for crimes committed with the use of a firearm[12] and small-area bans on the possession of handguns.[13]

This modest benefit may reflect the fact that members of both study groups had extensive prior criminal records and therefore were at high risk for later criminal activity.[14–16] The effects of handgun purchase denial would be expected to be moderate in such a population.

Among those with only one prior weapon or violence arrest charge, purchasers were 2 to 4 times as likely to be charged with new offenses as those who were denied. No such effect was seen among persons with no prior charges for such offenses or among those with 2 or more. Persons with no prior charges for these offenses may be at low risk; for them, handgun purchase denial would have less of an effect. Persons with 2 or more prior charges may have established a pattern of activity unaffected by denial of handgun purchase. Persons with a single prior arrest charge for a weapon or violent offense may be at high but modifiable risk.

In terms of some potentially important differences in risk for later criminal activity, this study was too small to determine whether the differences occurred by chance. Also, we assumed that there was no difference between individuals whose criminal records were available and those whose records were unavailable. These records are likely to have been deleted for lack of new activity. If so, our effect estimates are conservative.

We do not know whether those denied legal handgun purchase obtained a firearm by other means.[17] But while this policy's immediate objective is to prevent acquisition of handguns by high-risk individuals, its overall goal is to reduce their rate of criminal activity. Our evidence indicates that this occurs. □

Contributors

Ms Wright codesigned the project; performed data collection, data management, and data analysis;

wrote numerous drafts; and presented the results at a scientific meeting. Dr Wintemute conceived the original idea for the study, codesigned the project, provided epidemiological and criminological expertise, contributed to the interpretation of the results, and commented on all drafts. Dr Rivara provided epidemiological expertise, contributed to the interpretation of the results, and commented on all drafts.

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References

1. Taylor BM. *Changes in Criminal Victimization, 1994–1995*. Washington, DC: Bureau of Justice Statistics; 1997. NCJ publication 162032.
2. *Crime in the United States, 1995*. Washington, DC: Federal Bureau of Investigation; 1996.
3. Annest JL, Mercy JA, Gibson DR, Ryan GW. National estimates of nonfatal firearm-related injuries: beyond the tip of the iceberg. *JAMA*. 1995;273:1749–1754.
4. Report to the Attorney General on systems for identifying felons who attempt to purchase firearms. 54 *Federal Register*. 205:43524–43573 (1989)
5. Gun Control Act, 82 Stat 1213 (1968) (as amended).
6. Brady Handgun Violence Prevention Act, 107 Stat 1536 (1993).
7. Regional Justice Information Service. *Survey of State Procedures Related to Firearm Sales*. Washington, DC: Bureau of Justice Statistics; 1996. NCJ publication 160763.
8. Bureau of Justice Statistics. *Dictionary of Criminal Justice Data Terminology*. 2nd ed. Washington, DC: US Dept of Justice; 1981. NCJ publication 76939.
9. Wintemute GJ, Drake CM, Beaumont JJ, Wright MA, Parham CA. Prior misdemeanor convictions as a risk factor for later violent and firearm-related criminal activity among authorized purchasers of handguns. *JAMA*. 1998;280:2083–2087.
10. Hennekens CH, Buring JE. *Epidemiology in Medicine*. Boston, Mass: Little, Brown & Co; 1987.
11. *Uniform Crime Reporting Handbook*. Washington, DC: Federal Bureau of Investigation; 1984.
12. McDowall D, Loftin C, Wiersema B. A comparative study of the preventive effects of mandatory sentencing laws for gun crimes. *J Criminal Law Criminology*. 1992;83:378–394.
13. Loftin C, McDowall D, Wiersema B, Cottey TJ. Effects of restrictive licensing of handguns on homicide and suicide in the District of Columbia. *New Engl J Med*. 1991;325:1615–1620.
14. Blumstein A, Cohen J, Roth JA, Visher CA, eds. *Criminal Careers and "Career Criminals."* Vol. 1. Washington, DC: National Academy Press; 1986.
15. Blumstein A, Cohen J. Estimation of individual crime rates from arrest records. *J Criminal Law Criminology*. 1979;70:561–585.
16. *Report to the Nation on Crime and Justice*. 2nd ed. Washington, DC: Bureau of Justice Statistics; 1988. NCJ publication 105506.
17. Jacobs JB, Potter KA. Keeping guns out of the "wrong" hands: the Brady Law and the limits of regulation. *J Criminal Law Criminology*. 1995;86:93–120.

Deaths Attributable to Alzheimer's Disease in the United States

Douglas C. Ewbank, PhD

ABSTRACT

Objectives. This study provided 2 estimates of the number of deaths attributable to Alzheimer's disease in the United States.

Methods. One estimate was based on data from the East Boston, Mass, study. The second was based on a simulation using population-based estimates of prevalence and separate estimates of excess death by duration of disease.

Results. Despite different methods and very different estimates of prevalence, these 2 methods led to very similar estimates of 173 000 and 163 000 excess deaths.

Conclusions. These estimates suggest that 7.1% of all deaths in the United States in 1995 are attributable to Alzheimer's disease, placing it on a par with cerebrovascular diseases as the third leading cause of death. (*Am J Public Health*. 1999;89:90–92)

Over the past 20 years, Alzheimer's disease, once a little-known, rare form of early senility, has become a widely recognized, common disease of the elderly. One reason for this increased awareness is the high estimates of the number of cases of Alzheimer's disease and the number of deaths attributable to it.[1] Some journalists have accepted an estimate of 100 000 excess deaths from Alzheimer's disease annually in the United States The origin of this estimate is obscure, and many observers doubt its accuracy; it is not supported by vital statistics data based on death certificates.[2] I use data on the prevalence of Alzheimer's disease and excess mortality among cases to estimate the number of deaths attributable to Alzheimer's disease.

Methods

I present 2 sets of estimates. The first is based on the East Boston, Mass, study, which provides both prevalence and excess mortality rates.[3,4] The second estimate is based on a simulation model. This model combines prevalence data from several population-based studies with data on excess mortality.

To estimate excess deaths at each age up to 104 years, I calculated a life table up to 105 years of age for the United States for the period 1989 to 1991[5–7] with adjustments for age misreporting.[8] To bring the estimates up to date, I assumed that the rate of excess deaths in each age group stayed constant between 1990 and 1995, and I applied these rates to the estimated age distribution for 1995.[9]

Since the prevalence of Alzheimer's disease among minority groups is uncertain, I produced estimates for Whites and then adjusted them for higher prevalence rates among Blacks. I assumed that at every age the prevalence of Alzheimer's disease among US

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EXHIBIT
5

Preventing adolescent pregnancy and associated risks

ROBERT MILLER, MD, BSC

SUMMARY

Adolescent pregnancy is a complex and frustrating problem that exacts a large social and personal cost. This year approximately 40 000 Canadian teenagers will become pregnant. With proper prevention, this number could be reduced. Pregnant teenagers seem to be at increased risk for some obstetric complications and their children for some neonatal complications. Family physicians who see patients over the course of a lifetime are in a good position to prevent adolescent pregnancy and the associated complications.

RÉSUMÉ

Chez les adolescentes, la grossesse est un problème complexe et frustrant qui engloutit un coût personnel et social important. Cette année, environ 40 000 adolescentes deviendront enceintes. Une prévention adéquate permettrait de réduire ce nombre. Les adolescentes enceintes semblent à risque accru de certaines complications obstétricales et leurs enfants de certaines complications néonatales. Les médecins de famille qui voient des patients à toutes les étapes de leur vie sont dans une position privilégiée pour prévenir la grossesse chez les adolescentes et ses complications.

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In 1989, almost 40 000 female Canadians younger than 20 years became pregnant.[1] In 1988, 3435 children were born to Canadians younger than 20 who already had one child or more.[2] In 1985, the cost of adolescent births in the United States was estimated at $16.65 billion (US).[3] The statistics are unsettling, to say the least. The complex problem of adolescent pregnancy requires a multidisciplinary approach at many different levels of prevention.

While Canadian data seem to suggest that adolescent pregnancy rates are declining,[1,4] more needs to be done to combat the problem. Physicians can help to prevent adolescent pregnancy and its associated risks. This paper will discuss prevention in terms of primary prevention (interventions seeking to delay initiation of adolescent sexual activity), secondary prevention aimed at encouraging contraception in sexually active adolescents, and tertiary prevention (attempts to address the problems of maternal and neonatal morbidity through adequate prenatal and postnatal care).[5] This paper will also touch upon problems faced by adolescent mothers and their children.

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Primary prevention of adolescent pregnancy

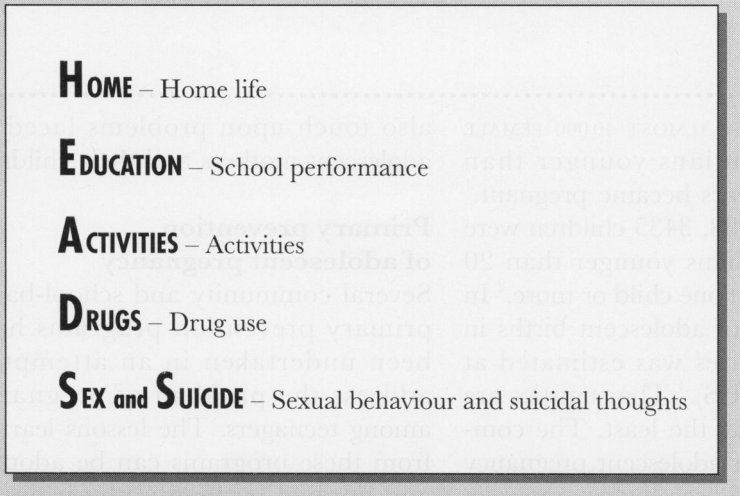
Several community and school-based primary prevention programs have been undertaken in an attempt to address the problem of pregnancy among teenagers. The lessons learned from these programs can be adopted and applied by family physicians in their efforts to alleviate the problem of adolescent pregnancy.

In the clinical approach to adolescent patients, a useful acronym to keep in mind is HEADS; this is a reminder for physicians to assess the home life, school performance (education), activities, drug use, sexual behaviour, and suicidal thoughts (*Figure 1*) of every adolescent patient.[6] Only after an adolescent's sexual knowledge and behaviour have been assessed can a physician reasonably assess the adolescent's risk of pregnancy.

One important role for physicians is that of educator on adolescent sexuality, pregnancy, and birth control. While educating adolescents in matters of sexuality does serve to increase knowledge, virtually no evidence supports the idea that sex education will result in a change in adolescent sexual

behaviour.[7-8,9] A review of sex education at Johns Hopkins University concluded "that neither pregnancy education nor contraception education exerts any significant effect on the risk of premarital pregnancy among sexually active teenagers."[10] However, some people argue that current education programs cannot be expected to succeed when the curriculum often begins at an age when many teenagers are already sexually active.[11] Rather than concluding that providing education to adolescents is a "dismal failure,"[12] it is more prudent to say that education alone does not seem to decrease the adolescent pregnancy rate.

Figure 1. **Assessing adolescent patients**



Data from Rauh.[6]

A study in South Carolina showed that saturating a community with pregnancy-prevention messages caused the rate of adolescent pregnancy to decline.[13] It is also interesting to note that, during the early 1980s, countries in which policies clearly emphasized that adolescent pregnancy is to be avoided had much lower rates of adolescent pregnancy than the United States, where the policy at the time was to attempt to reduce teenage sexual activity.[14] Family physicians can aid in saturating their own community by clearly getting the message across to adolescents that adolescent pregnancy should be avoided. Pregnancy prevention messages can also take the form of pamphlets and posters,[11] which should be present and available in physicians' offices.

Recent evidence has emerged that counseling teenagers to postpone initiation of sexual activity is beneficial. One program in Atlanta entitled "Postponing Sexual Involvement" was able to decrease sexual involvement by eighth-grade students by a factor of four to five times when compared with teenagers who did not have this program.[15] However, it should be pointed out that this program was not simply an "abstinence only" program, which has no proven effectiveness.[8,15] As Howard and Mitchell[15] describe the program:

> "Postponing Sexual Involvement" provides information designed to help adolescents explore attitudes and feelings about managing physical feelings within a relationship. It also teaches adolescents skills to resist social and peer pressures to become sexually involved.[15]

Physicians who use an approach similar to that of the program could have similar success in reducing early adolescent pregnancy rates; telling teenagers to "just say no" is not enough.

While we still have much yet to learn about the primary prevention of adolescent pregnancy, findings from available research can be translated into practical office policy in managing adolescent patients. The importance of primary prevention cannot be overstated. Many elementary and junior high school students report having sex for the first time because of social and peer pressure. Many adolescents state what they most want to know is "how to say no without hurting the other person's feelings."[15] In this situation, exploring adolescents' feelings about the relationship, their perceived consequences of saying no, and helping them decide what they want to do (social and peer pressures aside) are most needed. Physicians who forget about primary prevention and who prescribe birth

control for these patients could be doing their patients a disservice by increasing the social pressure for these adolescents to have intercourse.

Secondary prevention of adolescent pregnancy

Secondary prevention of adolescent pregnancy emphasizes birth control for sexually active adolescents. While some argue that any sexually active adolescent is at risk for adolescent pregnancy, early age at first intercourse and increased rate of pregnancy are strongly correlated.[16] Family physicians should have some familiarity with the biologic and social factors that seem to increase a female adolescent's risk of pregnancy. Early menarche,[14] low academic interest,[14] early and frequent dating,[17,18] previous adolescent pregnancy,[18] sexual abuse,[18] maternal history of adolescent pregnancy,[19] lack of parental supervision,[16] having a female head of the household,[14] low self-esteem,[14] behavioural problems in school,[20] smoking, drug use, and other risk-taking behaviours[20,21] all seem to increase adolescents' risk of pregnancy. Mentally retarded adolescents and depressed adolescents also seem to be at increased risk for adolescent pregnancy.[18,22]

Factors that seem to protect against adolescent pregnancy include religious practice and educational ambition.[21] Adolescent-parent communication does not seem to have an influence on adolescent sexual activity.[21] Sex education and school-based contraception clinics do not increase adolescent sexual activity,[21] as many parents fear.

Unfortunately, very few of the social, biologic, and behavioural markers that indicate increased risk for adolescent sexual activity and pregnancy can be modified by physicians. Physicians can use these markers, however, to anticipate the onset of adolescent sexual activity and to initiate primary and secondary prevention. If physicians do not anticipate adolescent sexual activity, an adolescent will wait on average 17 months after the inception of sexual activity before seeking contraception.[23]

When primary prevention is no longer an option for a patient at high risk for early teenage sexual activity, contraception and contraceptive education is necessary. Physicians must always keep in mind that every adolescent using contraception is potentially an accident waiting to happen. Thirty percent of adolescent pregnancies occur among "contraceptive users."[24] Adolescents often discontinue contraception because of side effects without telling their physicians.[23]

To ensure compliance, it is important for physicians to discuss how the contraceptive works, when to use it, and the likely side effects. Giving samples and written instructions at the initial visit sometimes helps to ensure compliance. Assessing the patient's knowledge periodically helps to ensure that instructions are understood. It is also valuable to tell adolescent patients directly not to discontinue their contraceptive without consulting a physician or a school nurse first.[23] Despite the physician's best efforts, however, noncompliance cannot be eliminated; a recent Canadian study suggests that, while 85% of sexually active Canadian youths considered themselves knowledgeable about the use of birth control, only 42% used it.[25] The percentage of contraceptive users declines further as the age of the adolescents declines.

Much of secondary prevention focuses on contraception for female adolescents at high risk for pregnancy. It is also important to recommend condoms for male adolescents who are at risk for sexually transmitted diseases and fatherhood. Unfortunately, the risk factors for adolescent fatherhood are not well studied to date.

Tertiary prevention of morbidity

Tertiary prevention begins where primary and secondary prevention fail. Tertiary prevention attempts to prevent morbidity in adolescent mothers through prenatal care and postnatal follow up.[5] When a female adolescent is diagnosed as pregnant, the options of continuing or terminating the

pregnancy should be explored with the patient. In this sense, termination can be considered tertiary prevention because it does prevent the problems associated with teenage pregnancy and the long-term consequences of adolescent parenthood.

If adolescents decide to continue their pregnancies, the importance of prenatal care should be emphasized and community services should be notified. Pregnant teenagers should receive counseling and contraception education to prevent recurrent pregnancies.

Pregnant adolescents experience pregnancy-induced hypertension,[26] premature labour,[6,26] iron deficiency anemia,[27] cephalopelvic disproportion, and dystocia[26] at rates higher than older women. Pregnant adolescents die at 2.5 times the rate of older women.[3] We do not know, however, whether adolescence is an independent risk factor for these obstetric problems or whether adolescents are more likely to have other risk factors that increase their risk. For example, many suspected risk factors for premature delivery, such as smoking, anemia, narcotic use, primigravida, poor nutrition, delayed or inadequate prenatal care, and low prepregnancy weight, are often present in a pregnant teenager.[6] Racial factors and primiparity have been used to explain the increased incidence of pregnancy-induced hypertension among pregnant adolescents.[18]

McAnarney and Hendee[18] argue, however, that pregnant adolescents receiving adequate prenatal care should be at no greater risk of obstetric complications than adult women of similar socioeconomic status.[18] Unfortunately, the prenatal care received by pregnant adolescents is often too little and too late. In a study of pregnant adolescents in Ottawa, only 26% of adolescents sought prenatal care in the first trimester and only 27% attended prenatal classes.[28] It has consistently been demonstrated that adolescents do not or cannot make use of services available to pregnant women.[29]

Adolescents cite fear of adult-oriented clinics, lack of information, and lack of transportation as important reasons for not attending prenatal clinics.[28] Pregnant adolescents who stay in school get less prenatal care than those who drop out, presumably because of scheduling difficulties.[30] Specific modifications to current prenatal services can increase adolescent participation. Clinics scheduled after school hours, transportation to and from the clinic site, and linkages between prenatal clinics and school health systems are but a few possible modifications that could increase adolescent participation in prenatal care.

Pregnant adolescents and pregnant adult women also differ in their health care needs. Pregnant adolescents are subject to nutritional deficiencies, and for this reason, daily vitamin-mineral supplementation of 30 mg of iron, 15 mg of zinc, 2 mg of copper, 250 mg of calcium, 2 mg of vitamin B_6, 300 µg of folate, 50 mg of vitamin C, and 200 IU of vitamin D have been suggested for adolescents with inadequate diets.[27] Drug use and sexually transmitted diseases are also more likely to be present in adolescent pregnancy than adult pregnancy.[31,32]

The Committee on Adolescent Medicine of the Canadian Paediatric Society has recommended that prenatal clinics specifically address the nutritional, social, obstetric, and other health needs of adolescents.[33] Recent evidence for the effectiveness of this suggestion has come from Portugal, where a group of adolescents received prenatal care from the same obstetrician, who emphasized the specific nutritional and health needs of pregnant adolescents.[34] Patients who received the adolescent-modified prenatal program showed an increased number of prenatal visits and higher birth weights than adolescents who received standard adult care. Another study in Texas found that, although adolescents who participated in "teen clinics" began prenatal care earlier and attended more clinics than adolescents

who received standard adult care, no significant increase in birth weight could be found among the adolescents who attended the clinic.[35] Maternal shelters for adolescent mothers have showed signs of increased birth weights.[36]

Preventing neonatal and pediatric complications

Data from the United States suggest that adolescents are two to six times more likely to deliver low birth weight infants (<2500 g) than nonadolescents.[37,38] In Canada, however, 1988 statistics show that 7% of babies born to mothers younger than 20 years were less than 2500g at birth. This figure is quite similar to the 5.5% of babies under 2500 g at birth born to women older than 20 years. Daughters of women younger than 20 years had a slightly higher likelihood of being less than 2500 g (8%).[2] Early and adequate prenatal care can reduce the incidence of low birth weight infants.

Infants of adolescent mothers are 2.5 times more likely to die of sudden infant death syndrome.[39] Infants of adolescent mothers should be monitored by family physicians for evidence of abuse and developmental delays, for which they are at increased risk.[37]

Final word: adolescent parenthood

More than 80% of adolescent births in Canada are to single mothers.[2] The problems faced by these women are well summarized in the following paragraph:

> ... She is unable to take the baby to teenage haunts and babysitters are expensive. Social Security and supplementary benefits are insufficient, and even if married, very young couples are likely to have low income.... Her old friends pursue their own interests which are no longer identical to her own; she may feel ostracized or abandoned by her friends, virtually isolated, cooped up with a baby and a pile of dirty nappies.... Sorely disappointed with the reality of a baby who changes things for the worse, who is a real person making real demands and needing full-time attention, the irritable hurt mother may resort to teasing the baby, rebelliously neglecting him/her or actively becoming the sadistic uncaring mother she has internalized, in impulsive acts of punitive emotional or physical cruelty.[40]

To prevent social isolation, family physicians can suggest a self-help group, such as One Parent Families Association of Canada, the Single Parents Association, or Parents without Partners, although these organizations seem to have limited appeal for people younger than 25 years.[41] In addition, mother and child could benefit from community services, such as Big Brothers or Big Sisters, churches, summer camps, counseling services, family life education, homemaker services, and social workers.[42]

Conclusion

Adolescent pregnancy carries many risks and long-term consequences. Adolescent pregnancy should be prevented. A family physician who has followed the patient from birth through adulthood is in an ideal position to help prevent adolescent pregnancy. Ideally, prevention should be aimed at delaying the initiation of sexual activity among young adolescents. In addition to acting as educators in human sexuality, family physicians in an ideal world should be able to identify adolescents at risk for adolescent pregnancy and institute appropriate interventions.

Teenage women who do become pregnant often require treatment different from that of older women. The special social, obstetric, and other health needs of pregnant adolescents can be addressed through new forms of delivering prenatal care to teenagers. Health care workers should recognize the fear and isolation that pregnant adolescents often feel when coming for prenatal care and should attempt to alleviate these feelings. The importance of prenatal care should be emphasized to pregnant adolescents.

Teenage pregnancy is a complex and frustrating problem; however, it should be remembered that, no matter which level of prevention one is talking about, physicians can always do something to reduce the risks of adolescent pregnancy. ■

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References

1. Wadhera S, Strachan J. Teenage pregnancies, Canada, 1975-1989. *Health Rep* 1991; 3(4):327-47.
2. Statistics Canada. Births (1987-1988). *Health Rep* 1990;2(1 Suppl 14):10-7.
3. Alexander CS, Guyer B. Adolescent pregnancy: occurrence and consequences. *Pediatr Ann* 1993;22(2):85-8.
4. Manitoba Health, Maternal and Child Health. *Teenage pregnancy in Manitoba: a statistical report.* Winnipeg: Queen's Printer, 1989.
5. McAnarney ER, Hendee WR. The prevention of adolescent pregnancy. *JAMA* 1989; 262:78-82.
6. Rauh JL. The pediatrician's role in assisting teenagers to avoid the consequences of adolescent pregnancy. *Pediatr Ann* 1993; 22(2):90-8.
7. Stout JW, Rivara FP. School and sex education: does it work? *Pediatrics* 1989;83:375-8.
8. Stout JW, Kirby D. The effects of sexuality education on adolescent sexual activity. *Pediatr Ann* 1993;22(2):120-6.
9. Huckabee M. Family physicians and sex education. *Am Fam Physician* 1993;47(2):340.
10. Dawson DA. The effects of sex education on adolescent behavior or [published erratum appears in *Fam Plann Perspect* 1986;18(5):242]. *Fam Plann Perspect* 1986;18(4):162-70.
11. Strasburger VC. Adolescent sexuality and the media. *Pediatr Clin North Am* 1989; 36:747-73.
12. Fletcher JL. Family physicians and sex education [see comment]. *Am Fam Physician* 1993;47(2):340-1. Comment in: *Am Fam Physician* 1993;47(2):341-2.
13. Vincent ML, Clearie AF, Schluchter MD. Reducing adolescent pregnancy through school and community-based education. *JAMA* 1987;257:3382-6.
14. Davis S. Pregnancy in adolescents. *Pediatr Clin North Am* 1989;36:665-80.
15. Howard M, Mitchell ME. Preventing teenage pregnancy: some questions to be answered and some answers to be questioned. *Pediatr Ann* 1993;22(2):109-18.
16. McCullough M, Scherman A. Adolescent pregnancy: contributing factors and strategies for prevention. *Adolescence* 1991;26(104):809-16.
17. Tsang RC. Teenage pregnancy is preventable – a challenge to our society. *Pediatr Ann* 1993;22(2):133-5.
18. McAnarney ER, Hendee WR. Adolescent pregnancy and its consequences. *JAMA* 1989; 262:74-7.
19. Kaln JR, Anderson KE. Intergenerational patterns of teenage fertility. *Demography* 1992; 29:39-57.
20. Zabin HS. The association between smoking and sexual behaviour among teens in U.S. contraceptive clinics. *Am J Public Health* 1984; 74:261-3.
21. Santelli JS, Beilenson P. Risk factors for adolescent sexual behaviour, fertility and sexually transmitted diseases. *J School Health* 1992; 62(7):271-9.
22. Levy SR, Perhats C, Nash-Johnson M, Welter JF. Reducing the risks in pregnant teens who are very young and those with mild mental retardation. *Ment Retard* 1992;30(4):195-203.
23. Ringdahl EN. The role of the family physician in preventing teenage pregnancy. *Am Fam Physician* 1992;45(5):2215-9.
24. Jay MS, DuRant RH, Litt IF. Female adolescent compliance with contraceptive regimes. *Pediatr Clin North Am* 1989;36:731-46.
25. Posterski D, Bibby R. *Canada's youth: ready for today.* Ottawa: Canadian Youth Federation, 1988.
26. Pauerstein CJ, editor. *Clinical obstetrics.* New York: John Wiley and Sons, 1987.
27. Gutierrez Y, King JC. Nutrition during teenage pregnancy. *Pediatr Ann* 1993; 22(2):99-108.
28. Lena SM, Marko E, Nimrod C, Merritt L, Poirier G, Shein E. Birthing experiences of adolescents at the Ottawa General Hospital Perinatal Centre. *Can Med Assoc J* 1993; 148(12):2149-54.
29. May KM. Social networks and help-seeking experiences of pregnant teens. *J Obstet Gynecol Neonatal Nurs* 1992;21(6):497-502.
30. Cartwright PS, McLaughlin FJ, Martinez AM, Caul DE, Hogan IG, Reed W, et al. Teenagers' perceptions of barriers to prenatal care. *South Med J* 1993;86(7):737-41.

31. Gillmore MR, Butler SS, Lohr MJ, Gilchrist L. Substance use and other factors associated with risky sexual behaviour among pregnant adolescents. *Fam Plann Perspect* 1992;24(6):255-68.
32. Oh MK, Cloud GA, Baker SL, Pass MA, Mulchahey K, Pass RF. Chlamydial infection and sexual behaviour in young pregnant teenagers. *Sex Transm Dis* 1993;20(1):45-50.
33. Committee on Adolescent Medicine. The adolescent mother and her baby. *Can Paediatr Soc News Bull* 1979;10:5.
34. Silva MO, Cabral H, Zuckerman B. Adolescent pregnancy in Portugal: effectiveness of continuity of care by an obstetrician. *Obstet Gynecol* 1993;81:142-6.
35. Morris DL, Berenson AB, Lawson J, Wiemann CM. Comparison of adolescent pregnancy outcomes by prenatal care source. *J Reprod Med* 1993;38(5):375-80.
36. LaGuardia KD, Druzin ML, Eades C. Maternity shelter care for adolescents: its effect on incidence of low birth weight. *Am J Obstet Gynecol* 1989;161:303-6.
37. Kotagal UR. Newborn consequences of teenage pregnancy. *Pediatr Ann* 1993; 22(2):127-32.
38. Hoekelman RA. Teenage pregnancy – one of our nation's most challenging dilemmas. *Pediatr Ann* 1993;22(2):81-2.
39. Standfast SJ, Jereb S, Janerich DT. The epidemiology of sudden infant death in upstate New York, II. Birth characteristics. *Am J Public Health* 1980;70:1061-7.
40. Raphael-Leff J. *Psychological processes of childbearing.* London: Chapman-Hall, 1991.
41. Schlesinger B, editor. *One in ten: the single parent in Canada.* Toronto: University of Toronto Press, 1979.
42. Canadian Council on Social Development. *The one-parent family: report of an inquiry on one-parent families in Canada.* Ottawa: Queen's Printer, 1971.

EXHIBIT
6

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Special Communication from the World Health Organization

Contraception for adolescents: social, clinical and service-delivery considerations ☆

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Abstract

A large proportion of the millions of adolescents worldwide who are sexually active have sex without using modern contraceptives or protection against sexually transmitted infections (STI). In many cases, this results in too-early (and often unwanted) pregnancies and STI, with negative consequences at different levels. Adolescents in general — and unmarried adolescents in particular — often find it difficult to obtain the contraceptives they need. Health workers are often unaware of the special needs of adolescents, and contraceptive services are only rarely provided in a manner that is accessible to adolescents. The World Health Organization stresses that age alone does not constitute a medical reason for denying any available contraceptive method to adolescents. However, it recommends that it is important for health workers to be well aware of the biomedical, psychological and social issues that affect how they can assist adolescents in making well-informed choices of contraceptive methods that suit their special needs, and in using the contraceptives, they choose in an effective manner. © 2001 WHO. Published by Elsevier Science Ltd. on behalf of International Federation of Gynecology and Obstetrics.

Keywords: Adolescents; Unprotected sexual activity; Pregnancy prevention; Unwanted pregnancy; Contraception

☆ WHO and other agencies in the United Nations system use the following operational definitions: adolescents, 10–19 years; youth, 15–24 years; and young people, 10–24 years.

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1. Introduction

One fifth of the world's population — over one billion people — are between the ages of 10 and 19 years. Eight and a half percent of these people live in developing countries [1]. Although adolescents now attain biological maturity earlier than in previous generations, as witnessed by the gradual decline in the average age for the onset of puberty and menarche, this is not always accompanied by a corresponding attainment of psychosocial maturity or economic independence [2]. Many adolescents have difficulty in adjusting to this discrepancy in their lives and in coping with their sexuality. The sexual and reproductive health needs of adolescents remain poorly understood and largely unmet. These needs are distinct in some ways from those of adults, and they vary markedly with age, marital status and cultural context. The health problems and threats faced by adolescents are numerous, but relate most importantly to the consequences of early and unprotected — and often times unwanted — sexual intercourse [3].

2. Too-early pregnancy: the scope of the problem, factors contributing to it, and its consequences

Most people start sexual activity during the adolescent years, often without adequate knowledge about sexuality. This puts them at high risk of unwanted pregnancy and sexually transmitted infections (STIs). It has been reported that 8 in every 10 young women in sub-Saharan Africa have had their first sexual intercourse before age 20; 4 in every 10 before marriage. Similarly, in 5 industrialized countries, 8 in every 10 young women have had intercourse as adolescents; 7 in every 10 before marriage [4].

In some societies, girls continue to be married at an early age, and they are expected to prove their fertility soon after marriage. In other societies, the age of marriage is rising so that the period during which premarital sex can take place is increasing. In the USA, for example, the number of years between menarche and first marriage rose from 7.2 in 1980 to 11.8 in 1988 [5]. Whether they are married or unmarried, adolescents can face potentially serious physical, social and economic consequences from unprotected sexual relations such as: unintended and too-early pregnancy and childbirth; unsafe abortion; and STIs including HIV (human immuno-deficiency virus infection). These events can also cut short educational and job opportunities, and negatively affect social and cultural development — especially of adolescent girls [6].

Worldwide, some 15 million pregnancies occur every year among young women aged 15 to 19 [1]. Surveys in developing countries show that between 20 and 60% of these pregnancies and births are mistimed or unwanted [1]. Faced with unintended pregnancy, many young women turn to abortion, whether it is legal or not. And when it is illegal, it is often unsafe. When abortion is unsafe, young women face serious health risks that can result in lifelong disability, infertility and even death. Estimates suggest that some 5 million women below the age of 20 undergo induced abortion every year [1]. In some African countries, for example Uganda, women under 20 account for as many as two-thirds of all cases of hospital admissions for abortion complications [1].

Adolescents who become pregnant, face serious health risks because their bodies may not be physically mature enough to handle the stress of pregnancy and childbirth. At menarche, girls are approximately 4% below full height and 12–18% below full pelvic growth [7]. Women aged 15–19 are three times more likely to die from complications of pregnancy than women aged 20–24 years, especially if they are unmarried and, thus, less likely to receive prenatal care. They are especially likely to suffer from pre-eclampsia, eclampsia, obstructed labor and its consequences, including obstetric fistula, and iron deficiency anemia. Infants born to adolescent mothers are more likely to be born before term and have low birth weight. They have an additional 24% higher risk of dying in the first month of life — a risk which continues during early childhood [8]. Furthermore, pregnant adolescents may be denied important educational and employment opportunities. For young men too, early fatherhood can disrupt educational plans and increase economic responsibilities [7].

In some countries, young unmarried women have been forced to turn to prostitution to support themselves and their children. Young parents might even feel a sense of shame, guilt or inadequacy, and this can lead to isolation from peer groups and loss of social learning experience.

WHO estimates that 340 million new cases of curable STIs and 1 million new cases of HIV infection occur each year. At least half of these infections occur in young people under 25 years of age and one-third in adolescents. This means that every year, more than 1 in every 20 adolescents contracts a curable STI. The number of cases of AIDS among individuals now in their twenties implies that many contracted HIV in the second decade of their lives [4]. Adolescents are at particularly high risk of STI including HIV infection for a number of biological, cultural, social and behavioral reasons. Among the most important of these reasons for high risk is the fact that they tend to engage in short-term relationships and do not protect themselves by consistently using condoms [9]. In addition, in many places, cultural expectations and gender norms condone early initiation of sexual activity by adolescent boys, encourage sex with multiple partners and sexual initiation by older women, including sex workers [9]. Women are physiologically more vulnerable to STI transmission than men, and also have more frequent and serious long-term sequelae to STI infection than men (including pelvic inflammatory disease, infertility, ectopic pregnancy and cervical cancer) [45]. STIs can also be transmitted in utero, or at the time of birth, leading to morbidity and mortality in infancy and childhood.

While family planning providers often focus on the medical and clinical aspects of providing contraceptives, an adolescent's ability to access and use family planning effectively is often influenced by broader issues. Inequitable gender norms, prevailing in many parts of the world, can affect the adolescent woman's overall health status and interactions with her partner. They contribute widely to unwanted pregnancy and STIs [10]. For example, girls and women often lack decision-making authority and, therefore, are unable to participate in decisions related to sexuality and family planning. They are also unable to make emergency decisions regarding when to seek health care for themselves or their children.

Studies worldwide reveal that 20–50% of women, at some time in their lives, are victims of physical violence by men they know. These studies also show that between 50 and 60% of these women are also sexually abused [11]. Adolescent women often lack the power, confidence and skills to refuse to have sex or to negotiate condom use. Gender norms can place them at high risk of sexual violence including coerced or forced sex [11]. Violence, either as a result of domestic abuse or political strife, can disproportionately affect women's ability to access and use family planning methods and services. Family planning providers need to be aware that these social issues influence contraceptive method use and, wherever possible, should advocate societal changes that improve the status of women in general. In addition, providers should take actions to reorientate health services to meet the needs of adolescents.

3. Knowledge of contraception, and use of contraceptives among adolescents

Millions of adolescents around the world are sexually active. Yet many of them have sex without using modern contraceptives or protection against STI. Demographic and Health Survey data from sub-Saharan Africa reveal that, in a number of countries, 80% of women have had sexual intercourse before age 20 [4]. While these women may know of one or more contraceptive methods, in many sub-Saharan African countries fewer than 30% of sexually active women have ever used a contraceptive method [4]. Few unmarried adolescents use contraception during their first sexual experience. For example, only 4% of sexually active women aged 15–24 in Ecuador reported using contraceptives, and the corresponding figure in Uganda was only 6% [9]. In the developing world, with some notable exceptions — such as in Latin America — few young women use contraception between marriage and first pregnancy. Most women who marry young have at least one child before age 20 [9]. Sexually active young

people are less likely to use contraception than adults, even within marriage. Unmarried adolescents, who face additional barriers to obtaining contraceptives, are even less likely to use contraception than married adolescents.

Studies in the USA suggest that there tends to be a delay of one year, on average, between the initiation of sexual activity and the first use of modern contraceptives. Thus, premarital sexual activity often results in unintended pregnancy. In Mexico City, nearly two thirds of women aged 18–19 with premarital sexual experience, reported that they had been pregnant at least once [9]. In Zimbabwe, 46% of women aged between 11 and 19 who had been sexually active before marriage, had been pregnant [9]. Many unintended pregnancies occur within a year of first sexual intercourse.

The most important reasons adolescents cite, in a variety of different settings [12], for not using contraceptive methods when they are sexually active are:

- the unexpected and unplanned nature of sexual activity;
- lack of information and knowledge about contraceptives and where to get them;
- inability to pay for services and transport;
- fear of medical procedures;
- fear of judgmental attitudes and resistance from providers; and
- embarrassment and fear of lack of confidentiality; and
- pressure to have children.

4. The effectiveness of education programmes on sexuality and reproductive health

For decades, education on sexuality and reproductive health for adolescents has been a controversial issue in developed and developing countries alike, because of concerns that knowledge would lead to earlier or increased sexual activity among unmarried adolescents. However, a review of scientific studies from around the world, conducted by the World Health Organization's Global Programme on AIDS, evaluated the impact of sex education programmes on adolescent knowledge and behavior, and found no support for this contention [13]. If any effect is observed, almost without exception, it is in the direction of postponed initiation of sexual intercourse and/or effective use of contraception. The report stated that failure to provide adolescents with appropriate and timely information represents a missed opportunity for reducing the incidence of unwanted pregnancy and STIs and their negative consequences.

Sex education programmes need to tailor some of their messages to suit the needs of adolescents who have not begun sexual activity, and others for those who are already sexually active. Also, because some adolescents begin sexual activity as early as age 12, formal sex education programmes need to begin before this age [13].

Research into the sexual and reproductive health of young people that has been carried out by WHO's Special Programme of Research, Development and Research Training in Human Reproduction and by other organizations, clearly point to the fact that information provision and education alone do not necessarily lead to behavioral change.[2] Increasing awareness and understanding is only the first step in preventing unwanted pregnancy and STI/HIV [1]. In addition, adolescents must know where to find services and be comfortable in using them. This important issue is dealt with later in this paper.

5. The importance of counseling, when providing services to adolescents

Adolescence is a period when individuals may test limits set for them by adults, experiment with new behaviors, and struggle with issues of independence, acceptance, and peer group pressure. Thus, a supportive, encouraging, non-judgmental environment, where confidentiality is ensured, is

[2] A discussion on other issues that contribute to changes in behaviour, e.g. social norms, are beyond the scope of this paper.

essential when counseling adolescents. Health care providers and others may benefit from special training in sexuality and in counseling skills, to enable them to deal with the needs, concerns and problems of adolescents [14].

Developing a good rapport with adolescents is important, as is using language that they can understand and be comfortable with. Due to inexperience and possibly embarrassment, adolescents may be hesitant in expressing their needs. Providers need to be patient and take the necessary time when working with adolescents.

Adolescents may have special information needs, such as a desire to understand the changes that are happening in their bodies as they mature, whether they are 'normal' or not, and other information regarding sexuality and sexual function. Service providers who are not comfortable discussing these issues with adolescents, should refer them to those who are. Peer group counseling may be particularly useful with adolescents, and whenever possible, parents should be encouraged to communicate with their children/adolescents on sexuality [15].

Counselling should cover responsible sexual behavior and needs to be directed at both males and females. Male adolescents should be encouraged to share the responsibility for contraception and STI/HIV prevention with their female partners.

6. Providing methods to adolescents for contraception and disease prevention

WHO places a high priority on ensuring that adolescents and young people worldwide have access to safe and high quality reproductive health and family planning services. WHO's department on Reproductive Health and Research has spearheaded an effort to ensure that its recommendations for the provision/use of contraceptives are supported by sound scientific evidence. The result of this effort, Improving Access to Quality Care in Family Planning: Medical Eligibility Criteria for Contraceptive Use [16], provides recommendations of an expert scientific working group for appropriate contraceptive use in the presence of various medical conditions. These criteria provide essential information for the safe provision of contraceptives to adolescents, while at the same time ensuring that they are not denied access to contraception based on unfounded 'contraindications'.

Over the past 30 years, significant progress has been made in developing new or improved contraceptive methods and introducing these methods to women and men worldwide. When prescribed and used properly, all currently available contraceptives are safe and effective for healthy adolescents. However, despite scientific advances in contraceptive formulation and design, many family planning programmes and providers still rely on service delivery guidelines and practices that are based on outdated information or pertain to products that are no longer in use. There is now a need to revise these guidelines based on current WHO recommendations, to ensure that methods are offered to adolescents based on the latest data on safety and effectiveness. Service delivery guidelines that restrict choice are, in effect, reducing the overall quality of care that is provided.

6.1. Medical eligibility for contraceptive methods

Healthy adolescents are medically eligible to use any of the methods of contraception that are currently available. Age alone does not constitute a medical reason for denying any method to adolescents. However, age is an important social factor to take into account when considering irreversible contraceptive methods, such as male or female sterilization. It is also true that some concerns exist regarding the use of certain other methods by adolescents (for instance, intrauterine devices), but this must be balanced with the advantages of avoiding pregnancy. Many of the method-specific eligibility criteria that apply to older clients also apply to young people. Some conditions such as circulatory system diseases, that may limit use of some methods in older women, will not often apply to young people, since these conditions are rare in this age group.

6.2. The importance of counseling for dual protection — the prevention of both pregnancy and STI / HIV

As indicated earlier, adolescents may have temporary sexual relationships and multiple partners, which puts them at a high risk of STI/HIV. Biologically, female adolescents are more susceptible to STI than adult women [17]. Sexually active adolescents need to be aware of the importance of protection against both pregnancy and STI/HIV. When used correctly and consistently, male condoms are the most effective method of preventing infections for those engaging in sexual intercourse, and can be highly effective in protecting against pregnancy as well. Another option for dual protection is to use condoms in conjunction with another method, such as combined oral contraceptives or injectables. Table 1 describes the dual protection properties of specific methods of contraception.

6.3. Other counseling issues for young adults

While they may choose to use any one of the contraceptive methods available to them, some methods may be more appropriate for adolescents for a variety of reasons. Many of the needs and concerns of adolescents that affect their choice of a contraceptive method are similar to those of adults seeking contraception. As is true for many women, for example, using a method that does not require a daily regimen, as oral contraceptive pills do, may be a more appropriate choice for an individual. For all women, side effects are a major reason for discontinuation of contraception, and this is true for adolescents as well.

Contraceptive providers need to discuss the following issues to help each of their clients, adolescents or adults, make an informed and voluntary choice of a contraceptive method(s): understanding the relative efficacy of the method; common side effects; health risks and benefits of the method; information on return to fertility after discontinuing method use; and information on protection against STI/HIV. After a method is chosen, it is also important to discuss the correct use of the method and follow-up information, such as signs and symptoms, which would necessitate a return to the clinic.

Expanding the number of method choices offered can lead to improved satisfaction, increased acceptance and higher contraceptive prevalence. Proper education and counseling at the time of method selection can help adolescents address their specific problems and make well-informed, voluntary decisions. Every effort should be made so that service and method cost do not limit the options available [15].

6.4. Married adolescents

Much of the advice regarding adolescents and contraceptive use has focused on unmarried adolescents, but many of those seeking family planning services are married. Their contraceptive needs are similar to those of married adults, but they may have other special information needs.

In terms of counseling issues, married adolescents may be particularly concerned about return to fertility. Those desiring a quick return to fertility may prefer to avoid injectables such as Depo Medroxy Progesterone Acetate (DMPA), which can delay return to fertility. Young married women may, in some cases, feel a pressure to have children and, thus, may want to keep their contraceptive use private from their spouse or in-laws. They also may knowingly or unknowingly be in a relationship where they are at risk for STI/HIV. This is an important, yet often difficult issue to discuss, and must be done with sensitivity.

6.5. Unmarried adolescents

Unmarried adolescents may be less likely to seek contraceptive services at health facilities because embarrassment at needing or wanting reproductive health services, and because of fears that the staff may be hostile or judgmental or that their parents might learn of their visit [18]. Adolescents need to feel that they are respected, that their needs are taken seriously, and that they have the right to use contraception if they desire.

Table 1
Dual protection of available contraceptive methods

Method	Effectiveness against pregnancy [32]		Protection against STI/HIV	Comments and considerations
	As commonly used	Used correctly and consistently		
Abstinence and non-penetrative sex	Not effective	Very effective	Protective against STI/HIV	Most effective method for dual protection. Only provides dual protection when used correctly and consistently.
Male condom	Somewhat effective	Effective	Protective against STI/HIV [21]	Only provides dual protection when used correctly and consistently.
Female condom	Somewhat effective	Effective	Protective against STI/HIV, although data is limited [23]	Only provides dual protection when used correctly and consistently.
Spermicide	Somewhat effective	Effective	May protect against gonorrhea and chlamydia [21], no protection against HIV [43]	Only provides limited dual protection when used correctly and consistently. Not recommended for use alone. Not recommended for frequent use (may cause genital lesions.)
Diaphragm with spermicide	Somewhat effective	Effective	May protect against gonorrhea and chlamydia [21], no protection against HIV [43]	Only provides limited dual protection when used correctly and consistently. Spermicide not recommended for frequent use (may cause genital lesions.)
Combined Oral Contraceptives (COCS)	Effective	Very effective	Not protective	Only protective against pregnancy when used correctly and consistently. If at risk of STI/HIV, recommend switching to condoms or using condoms along with this method.
Progestin-only Pills (POPS)	Very effective (during breast-feeding)		Not protective	
Emergency Contraceptive Pills (POPS or COCS)	Effective		Not protective	Only protective against pregnancy when used correctly

Table 1. (*Continued*)

Method	Effectiveness against pregnancy [32]		Protection against STI/HIV	Comments and considerations
	As commonly used	Used correctly and consistently		
Long-Acting Hormonals: Injectables or Implants	Very effective		Not protective	If at risk of STI/HIV, recommend switching to condoms or using condoms along with this method.
Copper Interuterine Device (ILTD)	Very effective		Not protective	Use of IUDs among women at risk of STI/HIV is generally not recommended (unless other, more appropriate methods are not available.) Insertion of an IUD in a woman with an STI increases the risk of PID If an IUD user becomes at risk of STI/HIV, recommend switching to comdoms or using condoms along with this method.
Fertility awareness based methods	Somewhat effective	Effective	Not protective	Only protective against pregnancy when used correctly and consistently. If at risk of STI/HIV, recommend switching to condoms or using condoms along with this method.
Lactational Amenorrhoea (LAM) during first 6 months postpartum	Effective	Very effective	Not protective	
Withdrawal	Somewhat effective	Effective	Not protective	
Male and Female Sterilization	Very effective	Not protective	If at risk of STI/HIV, recommend using condoms along with this method	

For unmarried adolescents who do seek contraceptive services, it is important to discuss abstinence or non-penetrative sexual activity as options, even with those who have already had sexual intercourse. With support, individuals can delay sexual activity until they are older and, thus, be better able to deal with its social, psychological and physical implications [19]. This requires commitment, high motivation and self-control. Adolescents need support and encouragement to abstain from and/or delay the initiation or continuation of sexual intercourse.

When discussing abstinence, it is important also to discuss safe sexual behaviors that do not put individuals at risk of pregnancy or STI/HIV. These include non-penetrative sexual activities such as stroking, rubbing, massage or other ways that sexual pleasure can be given, to oneself or to others. These behaviors are safe as long as no blood, semen or vaginal secretions come into contact with mucous membrane or damaged skin [20].

For unmarried adolescents who do desire to have sexual intercourse, condoms — or condoms in combination with another method for dual protection — are the best recommendation. For adolescents who are not in monogamous relationships, sexual activity may be sporadic and unplanned. In these circumstances, condoms are a good choice because they are widely available — easily and inexpensively — and can be used when needed.

Adolescents, especially those in monogamous relationships, may also desire to use other, longer-acting methods. Family planning providers must support this decision. For these adolescents as well, risk of STI/HIV must be discussed. Some of them may be at risk of contacting STI/HIV when they do not consider themselves to be, if their partner has other sexual partners.

6.6. Method-specific medical, service delivery and counseling considerations for adolescents

A brief review of method-specific medical, service delivery and counseling considerations for adolescents is provided below in Table 2. This table covers issues that are most important when providing contraceptive methods to adolescents. For a more thorough discussion of the medical eligibility criteria, please refer to Improving Access to Quality Care in Family Planning: Medical Eligibility Criteria for Contraceptive Use [16]. For more information on methods, such as mechanism of action, correct use, management of problems and side effects, and contraceptive benefits, see The Essentials of Contraceptive Technology: A Handbook for Clinic Staff [32].

7. Special considerations for contraceptive service provision to adolescents

A detailed discussion on expanding the availability and improving the accessibility of high quality contraceptive services is beyond the scope of this paper. The twin-track approach recommended by VHO is to train/retrain service providers, in order to enable them to respond more effectively to the physical, psychological and sociocultural needs of adolescents; and to reorientate existing service-delivery systems to make them responsive and sensitive to the needs and preferences of adolescents [14].

For all adolescents, but especially for those who are sexually active outside the context of marriage, access to appropriate information and services — and the assurance of confidentiality — are particularly important. To help ensure contraceptive use among sexually active adolescents, contraceptive information and services must be made readily available through a variety of delivery points, including community-based points and outreach services. In many countries, laws restrict young people's access to such information and services and can prohibit some providers from offering contraceptive services to adolescents. Changing those restrictive laws is an important step towards improving access and quality of family planning care and, therefore, protecting the physical and social well being of adolescents. Building governmental and non-governmental coalitions — including the media, community leaders, youth leaders, school associations, and religious groups — to support and contribute to

Table 2
Medical, service delivery and counselling considerations for adolescents

Method	Dual protection	Age Restriction	Availability/ accessibility	Side effects	Other important counselling points for adolescents	Comments/ considerations
Abstinence and non-penetrative sex [19]	Yes	No age restriction	Available at anytime to anyone	None	Can be used even by those who have already begun sexual activity To prevent pregnancy, avoid vaginal intercourse To prevent STI/HIV, also avoid anal intercourse and oral sex Examples of safe sexual activities: hand-holding, hugging, massaging, kissing, mutual masturbation Emphasize need to use condom or other method if penetrative sex is initiated	Most effective method for dual protection Requires high level of motivation and self-control Counselling can help with issues of motivation and peer pressure
Male condom [21,22]	Yes	No age restriction	Easily available in most places	Usually no side effects (local irritation possible)	Explain and demonstrate correct use Requires partner communication/ negotiation important Requires supplies at home (fear of discovery may be an issue)	Important method because provides dual protection
Female condom [23]	Yes (data limited)	No age restriction	Availability limited in many places High cost may be a constraint	Usually no side effects (local irritation possible)	Explain and demonstrate correct use Use can be controlled by woman Requires supplies at home (fear of discovery may be an issue)	Important method because provides dual protection
Spermicides [24]	Yes (protective against some STIs, not HIV)	No age restriction	Easily available in many places	Usually no side effects (local irritation possible)	Explain and demonstrate correct use Recommend use with condom or diaphragm Requires supplies at home (fear of discovery may be an issue)	Not recommended for use alone Not recommended for frequent use (may cause genital lesions)
Diaphragm with spermicide [24]	Yes (protective against some STIs, not HIV)	No age restriction	Requires a clinic visit for fitting Availability limited in many places	Usually no side effects (local irritation possible)	Explain and demonstrate correct use Requires supplies at home (fear of discovery may be an issue)	Spermicide not recommended for frequent use (may cause genital lesions)

Method	Dual protection	Age Restriction	Availability/ accessibility	Side effects	Other important counselling points for adolescents	Comments/ considerations
Low Dose Combined Oral Contraceptives (COCs) [25–32]	No	No age restriction	Requires clinic visit in many places May be available through community-based distribution	Side effects may include nausea or headache	Explain and demonstrate correct use Recommend also using condom if at risk of STI/HIV Requires daily regimen Requires supplies at home (fear of discovery may be an issue)	A widely used method among adolescents, although correct and consistent use may be an issue
Progestin-only pills (POPs) [31]	No	No age restriction	Requires clinic visit in many places May be available through community-based distribution	Fewer side effects than COCs or long-acting hormonals (injectables and implants)	Explain and demonstrate correct use Recommend also using condom if at risk of STI/HIV Requires strict daily regimen Requires supplies at home (fear of discovery may be an issue)	Stricter regimen than COCs Good option for breast-feeding women after first 6 weeks postpartum
Emergency contraceptive pills (POPs or COCs) [33–35]	No	No age restriction	Requires clinic visit in many places May be available over-the-counter or through community-based distribution	Side effects may include nausea and vomiting (much less likely with POP regimen)	Not meant for repeated use Discuss initiation of a regular method	Important method when intercourse may be unplanned, unprotected
Injectables: depo medroxy progresterone acetate (DMPA) and norethisterone enanthate (NET-EN) [36–38]	No	Not first method of choice for those under 18, as there is a theoretical concern that bone development could be hindered	Require clinic visit every 2 or 3 months May be available through community-based distribution	Side effects may include irregular bleeding, amenorrhea, or weight gain	Recommend also using condom if at risk of STI/HIV Often delay in return to fertility No daily regimen required No supplies needed at home (can be private)	May be a good option for those desiring a without a daily regimen Side effects the main reason for discontinuation and if they occur, method cannot be quickly discontinued
Combined injectables: cyclofem and mesigyna [38,44]	No	No age restriction	Require clinic visit every month May be available through community-based distribution	Side effects may include nausea or headache	Recommend also using condom if at risk of STI/HIV No daily regimen required No supplies needed at home (can be private)	May be a good option for those desiring a hormonal method, without a daily regimen
Norplant implants [32,37]	No	No age restriction	Clinic visit required for insertion and removal	Side effects may include irregular bleeding or amenorrhoea	Recommend also using condom if at risk of STI/HIV No delay in return to fertility No daily regimen required No supplies needed at home (can be private)	May be a good option for those desiring a hormonal method without a daily or monthly regimen

Table 2 (*Continued*)

Method	Dual protection	Age Restriction	Availability/ accessibility	Side effects	Other important counselling points for adolescents	Comments/ considerations
Copper interuterine device (IUD) [39,40]	No	Not first method of choice for those under 20, as risk of expulsion may be higher for nulliparous women	Clinic visit required for insertion and removal	Sides effects may include excessive bleeding or pain during menses	Recommend also using condom if at risk of STI/HIV No delay in return to fertility No daily regimen required No supplies needed at home (can be private)	Not a good choice for those at risk of STI/HIV (more than one sexual partner or whose partner may have more than one partner) nulliparous women may be at higher risk of expulsion
Fertility awareness-based methods [30,33]	No	No age restriction	Available at anytime to anyone	No side effects	Explain correct use Recommend also using condom if at risk of STI/HIV Requires partner communication/ negotiation important	Important for adolescents to understand their fertility May not be as effective in younger women whose menstrual cycles are irregular May be difficult to use for couples who have sex infrequently
Lactational amenorrhoea (LAM) [30,33]	No	No age restriction	Can be used during first 6 months postpartum when exclusively breastfeeding and amenorrhoeic	No side effects	Explain and demonstrate correct use Recommend also using condom if at risk of STI/HIV	Important method option for breastfeeding women
Withdrawal [30,33]	No	No age restriction	Available at anytime to anyone	No side effects	Explain correct use Requires partner communication/ negotiation important	Important method to discuss as may be only method available in some places
Male and female sterilization [41,42]	No	No age restriction However, age at sterilization is a key risk factor for regret for both women and men	Clinic visit required for procedure	Minimal side effects, local infection possible Permanent method No daily regimen required	Recommend also using condom if at risk of STI/HIV No supplies needed at home (can be private)	Consider only in special circumstances after thorough counselling

the provision of information and services to adolescents has been successful in some areas.

For service providers to be able to provide good quality services, they require training and supervision, appropriate facilities, adequate supplies and functional linkages with other service providers. These points are discussed below.

- *Training and supervision:* In addition to providing necessary technical information and clinical skills, training should provide participants with an awareness of young people's rights, and with the skills necessary to interact with them in a respectful way. Training should be reinforced through ongoing supportive supervision that provides constructive feedback and encouragement.
- *Appropriate facilities:* Service delivery facilities should be convenient (location and timing) and provide a comfortable environment for adolescents. For example, examination rooms should be separated from other areas by walls or partitions to allow for maximum privacy, appropriate levels of cleanliness should be maintained and other basic facilities, such as toilets and comfortable waiting areas, should be provided.
- *Adequate supplies:* For providers to be able to facilitate adolescents' rights to choice of method and appropriate information, they need access to a reliable source of supply of both contraceptive products and educational materials. In addition, access to supplies for infection control is crucial for maintaining quality of care for contraceptives requiring a clinical intervention (e.g. injectables and implants).
- *Functional linkages to other service providers:* Adolescents have diverse needs for information and services, and not all programmes will be able to address all these needs. By establishing linkages with other care providers in the community (where available), service providers can create a broad network of service delivery options to which adolescents can be referred [15]. By providing quality services that respect adolescents' rights and respond to their needs, programmes will contribute to the overall health and well being of their adolescent clients/patients and to their communities.

8. Conclusion

Studies that have been carried out over the past ten years have demonstrated unequivocally that in many parts of the world, adolescents are entering their reproductive years ill prepared to protect and safeguard their sexual and reproductive health. Helping health workers understand the special needs of adolescents, and reorienting health services to meet those needs and preferences, will go a long way in helping to prevent the consequences of too-early and unprotected sexual activity in this important population group.

References

[1] UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP). Progress in human reproduction research. Sexual behaviour of young people, No. 41. Geneva: WHO, 1997.

[2] WHO, UNFPA. Young people have the right to know, the right to protection, the right to participation. Entre Nous: The European Magazine for Reproductive Health. No. 36–37, 1997.

[3] UNFPA. Round table on adolescent reproductive health: key future actions. Report of the International Conference on population and development (ICPD) + 5 years. New York: UNFPA, 1998.

[4] McCauley AP, Salter C. Meeting the needs of young people. Population Reports 1995;J(41).

[5] The Alan Guttmacher Institute. Into a new world. Young women's sexual and reproductive lives. New York: The Alan Guttmacher Institute, 1998.

[6] WHO. Communicating family planning in reproductive health: key messages for communicators. Geneva: WHO, 1997.

[7] Macro International Incorporated. High-risk births and maternity care. Demographic and health surveys: comparative studies, number 8. Columbia, Maryland: Macro International Incorporated, 1993.

[8] WHO. Health benefits of family planning. Geneva: WHO, 1995.
[9] Population Reference Bureau. The world's youth. Washington, DC: Population Reference Bureau, 1996.
[10] WHO. Gender and health. WHO technical paper. Geneva: WHO, 1998.
[11] Family Health International. Adolescent reproductive health. Network 1997;17(3).
[12] Family Health International. Reproductive health of young adults: contraception, pregnancy and sexually transmitted diseases. Contraceptive technology update series. North Carolina, USA: Family Health International, 1997.
[13] Grunseit AC, Kippax S. Effects of sex education on young people's sexual behaviour. Geneva: WHO, 1993.
[14] WHO. Programming for adolescent health and development. WHO technical report series 886. Geneva: WHO, 1999.
[15] WHO. Contraceptive method mix. Guidelines for policy and service delivery. Geneva: WHO, 1994.
[16] WHO. Improving access to quality care in family planning: medical eligibility criteria for contraceptive use, 2nd Edition. Geneva:WHO, in press.
[17] Westrom L, Mardh PA. Acute pelvic inflammatory disease. In: Holmes KK, Mardh PA, Sparling PF, Wiesner PJ, editors. Sexually transmitted diseases, 2nd edition. New York: McGraw Hill, 1990:593–614.
[18] Nelson K, MacLaren L, Magnani R. Assessing and planning for youth friendly reproductive health services. Washington DC: Focus on Young Adults, 2000.
[19] Kirby D. No easy answers: research findings on programs to reduce teen pregnancy. Washington DC: The National Campaign to Prevent Teen Pregnancy, 1998.
[20] Klouda T, Gordon G. Talking AIDS: a guide for community work. London: Macmillan, 1988.
[21] Feldblum PJ, Morrison CS, Roddy RE, Cates W Jr. The effectiveness of barrier methods of contraception in preventing the spread of HIV. AIDS, Supplement A 1995;9:585–593.
[22] Centers for Disease Control and Prevention Update. Barrier protection against HIV infection and other sexually transmitted diseases. Mortality Morbidity Wkly Rep 1993;42:589–597.
[23] WHO, UNAIDS. The female condom: a review. Geneva: WHO,UNAIDS, 1998.
[24] Feldblum PJ, Weir SS. The protective effect of nonoxynol-9 against HIV infection. Am J Public Health 1994;84:1032–1034.
[25] Chez RA. Clinical aspects of the three new progesterones: desogestrel, gestodene and norgestimate. Am J Obstet Gynecol 1989;160:1296–1300.
[26] Kaunits AM. Guiding adolescents in proper contraceptive use. Contemp Obstet Gynecol 1992;37:15–33.
[27] Lobo RA, Stanczyk FZ. New knowledge in the physiology of hormonal contraceptives. Am J Obstet Gynaecol 1994;170:1499–1507.
[28] American College of Obstetrics and Gynecology. Committee opinion: committee on adolescent health care, Number 90, February 1991. Int J Gynecol Obstet 1992;37:309–312.
[29] Collaborative Group on Hormonal Factors in Breast Cancer. Collaborative reanalysis of individual data on 53297 women with breast cancer, and 100239 women without breast cancer from 54 epidemiological studies. Lancet 1996;347:1713–1727.
[30] USAID. Technical guidance working group. Recommendations for updating selected practices in contraceptive use. Results of a technical meeting, Volumes 1 and 2. Washington: USAID, 1995.
[31] Stang A, Schwingl P, Rivera R. New contraceptive eligibility checklists for combined oral contraceptives and depo-medroxyprogesterone acetate (DMPA) provision in community based service programmes. Bull VMO (in press).
[32] Hatcher RA, Rinehart W, Blackburn R, Geller JS, Shelton JD. The essentials of contraceptive technology. Baltimore: Johns Hopkins School of Public Health, 1997.
[33] WHO. Emergency contraception: a guide for service delivery. Geneva: VMO, 1998.
[34] Task Force on Post-Ovulatory Methods of Fertility Regulation. Randomized controlled trial of Levenorgestrel vs. the Yuzpe Regimen of combined oral contraceptives for emergency contraception. Lancet 1998;352:428–433.
[35] Rivera R, Grimes D, Yacobson I. The mechanism of action of hormonal contraceptives and intrauterine devices. Am J Obstet Gynecol 1999;181:263–269.
[36] Lei ZW, Wu SC, Garceau RJ, Jiang S, Yang QZ, Wang WL, Vander Meulen TC. Effect of pre-treatment counselling on discontinuation rates in Chinese women given depo-medroxyprogesterone acetate for contraception. Contraception. 1996;53:357–361.
[37] Family Health International. Contraceptive update. Does progesterone increase HIV risk? Network 1996;2:18–19.
[38] WHO. Injectable contraceptives: what health workers need to know. Geneva: WHO, 1997.
[39] WHO. Intra-uterine devices. Technical and managerial guidelines for services. Geneva: WHO, 1997.
[40] The American College of Obstetricians and Gynecologists. Statement on contraceptive methods, 1998.
[41] WHO. Special programme of research, development and research training in human reproduction. Long-term reversible contraception: 12 years experience with T Cu-380A IUD and T Cu 220C. Contraception 1997;56:341–352.
[42] Wilcox LS, Zeger SL, Chu SY, Peterson HB, Eaker ED. Risk factors for regret after tubal sterilization: 5 years of follow up in a prospective study. Fertil Steril 1991;55:927–933.

[43] Roddy RE, Zekeng L, Ryan KA, Tamoufe U, Weir SS, Wong EL. A controlled trial of nonoxynol-9 film to reduce male-to-female HIV transmission. N Engl J Med 1998;339(8):504–510.
[44] Hatcher RA. Contraceptive technology, 17th edition. New York: Ardent Media Incorporated, 1998.
[45] Cates W Jr, Stone KM. Family planning, sexually transmitted diseases and contraceptive choice: a literature update—Part 1. Family Planning Perspectives 1992;24(2):75–84.

EXHIBIT
7

Interval between menarche and first sexual intercourse, related to risk of human papillomavirus infection

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The purpose of this investigation was to study the occurrence of human papillomavirus (HPV) infection in relation to the interval between menarche and first intercourse. Two hundred eight subjects, aged 13 to 21 years, were recruited from an ambulatory adolescent clinic. Patients were excluded if they had a history of genital warts or an abnormal Papanicolaou smear. All subjects completed a self-administered questionnaire regarding demographics and their menstrual, sexual, and contraceptive histories. HPV infection was determined by in situ hybridization or changes consistent with HPV on a Papanicolaou smear, or both. The prevalence of HPV infection was 19.2%. The average interval between menarche and onset of sexual activity was 26.6 months for those who were found to have HPV infection compared with 35.7 months for those whose test results were negative ($p = 0.02$). First sexual intercourse within 18 months of menarche was associated with a significant elevation of risk of HPV infection, in comparison with that in adolescents who postpone first intercourse 3 to 4 years after menarche. These data suggest that factors such as increased biologic vulnerability may play a role in HPV infections among adolescent women. (J PEDIATR 1994;125:661-6)

Earlier age at first sexual intercourse is consistently identified as a risk marker for sexually transmitted diseases, including human papillomavirus infection[1, 2] and its sequelae (cervical intraepithelial neoplasia and cervical cancer).[3] Although earlier age at first intercourse is associated with other behavioral STD risks,[4, 5] such as multiple sexual partners, cigarette smoking, and failure to use barrier contraceptives, it may also identify a period of increased susceptibility to some infectious agents. Timing of initial sexual intercourse may occur at a vulnerable time during which exposure may lend itself to increased susceptibility. At the onset of puberty, rising levels of estrogen lead to a drop in vaginal pH and redefinement of the squamocolumnar junction on the ectocervix to a more caudal position at the external os by a process called squamous metaplasia.[6] Areas of squamous metaplasia on the cervix are thought to have increased susceptibility to neoplastic stimuli because the majority of cervical cancers arise from this area.[7] Rapid

CIN	Cervical intraepithelial neoplasia
HPV	Human papillomavirus
Pap	Papanicolaou
STD	Sexually transmitted disease

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changes of the cervix—both histologic and hormonal—in the early postmenarcheal period presumably increase susceptibility to sexually transmitted organisms. Exposure to sexually transmitted organisms before stabilization of the transformation zone and maturation of the cervix could lead to increased susceptibility to infection.

Defining cervical immaturity and separating it from other behavioral risk markers associated with STDs are difficult.[8] Moscicki et al.[9] found that adolescents with CIN had a larger area of cervical ectopy and were a year older at menarche than control subjects; however, no difference in the interval between menarche and first intercourse was found, although the study may have had limited statistical power to detect such a difference.

The potential relevance of a "window of vulnerability" to some STDs in adolescence remains insufficiently explored. Questions in this area would best be answered by a longitudinal study of unexposed girls, but such a study would be expensive and both ethically and logistically complex. The study reported here represents preliminary efforts to gather data about potential increased susceptibility to sexually transmitted pathogens during the early postmenarcheal period. Human papillomavirus was chosen because it is common, easily detected, and thought usually to cause long-standing infection.[10] The interval between menarche and first intercourse was used as a surrogate measure for the biologic maturity of the cervix. We hypothesized that female adolescents who had sexual intercourse soon after menarche would be more likely to be infected with HPV than those with a longer interval between menarche and first intercourse.

METHODS

Between October 1990 and May 1992, sexually active female adolescents who were undergoing a pelvic examination in an adolescent medicine clinic were asked to participate in the study. The clinic primarily serves an urban indigent population in the area, and approximately 60% of the visits are for reproductive health services. Participants were enrolled on the basis of clinician/researcher availability. Subjects were excluded if they refused or denied being sexually active, or if they had a history of genital warts or an abnormal Papanicolaou smear by self report (including atypia). Data were not collected on subjects who refused to participate. Adolescents who came to the clinic for initial evaluation of venereal warts were allowed to participate. Most of the adolescents enrolled were seen for annual Pap smears or birth control or both, for concerns over an STD, or for menstrual abnormalities.

All subjects completed a self-administered questionnaire regarding demographics and menstrual, sexual, and contraceptive histories. This questionnaire was initially designed and piloted by the investigators in the same adolescent clinic. With several revisions, the final version was constructed to be easily understood and completed within 10 minutes. Subjects were asked to list the month at onset of menarche and of first intercourse; the season and nearest holiday to the event were also elicited if the precise month was not recalled. Retesting was done within 3 to 14 months after the initial completion of the questionnaire. Retest reliability for menarche and first intercourse was greater than 80%; this is consistent with other studies of reliability of the dating of pubertal events.[11] All the participants underwent pelvic examination to obtain cervical material for Pap smear evaluation, culture of *Neisseria gonorrhoeae* and fluorescent antibody testing for *Chlamydia trachomatis* (MicroTrak; Cambridge Bioscience Corp., Worcester, Mass.). A second Dacron swab was used to swab the external cervical os and squamocolumnar junction for detection of HPV DNA (ViraPap; Life Technologies, Inc., Gaithersburg, Md.), which screens for HPV types 6, 11, 16, 18, 31, 33, and 35 with a phosphorus 32–labeled ribonucleic acid probe). Detection of HPV DNA was performed by dot blot hybridization through techniques previously described.[12] Infection with HPV was defined as having changes on a Pap smear consistent with the presence of HPV (koilocytes [i.e., squamous cells that have wrinkled, swollen, pyknotic nuclei, perinuclear "halos," and marginated cytoplasm] and/or a positive ViraPap test result). The study was approved by the institutional review board at the University of Oklahoma, and written informed consent was obtained from the participants (in addition to parental consent, if the subject was less than 18 years of age and not seeking confidential care for birth control or diagnosis of an STD).

Statistical analysis was performed with SPSS for Windows software.[13] Univariate analysis used the Student *t* test and chi-square analysis. Variables found to be significantly related to HPV infection by univariate analysis were entered into a multiple logistic regression model to assess their relationship to HPV, independent of the influence of other measures. The Wald statistic was used to assess significance for the model. Statistical significance was accepted at $p < 0.05$.

RESULTS

A total of 216 subjects, aged 13 to 21 years, were enrolled. Eight subjects were excluded for incomplete or invalid questionnaires. Two HPV specimens were lost; the HPV status of these subjects was determined by Pap smear results. Final analyses were based on 208 subjects.

For the entire sample, the mean age at menarche, the mean age at first intercourse, and the interval between menarche and first intercourse were 12.6 years (SD = 1.6), 15.4 years (SD = 1.6), and 34.1 months (SD = 21.5), respec-

Table I. Comparison of demographic and behavioral characteristics of HPV-uninfected (HPV^-) and HPV-infected (HPV^+) subjects

	HPV^- (n = 171)	HPV^+ (n = 37)	*p*
Age (yr)	18.6	18.5	0.92
Ethnicity			
White: % (n)	46 (79)	57 (21)	0.50
Black: % (n)	46 (79)	38 (14)	
Other: % (n)	8 (13)	5 (2)	
Menarche (yr)	12.5	12.8	0.30
Age at first intercourse (yr)	15.5	15.1	0.16
Interval between menarche and first intercourse (mo)	35.7	26.6	0.02
Intercourse frequency, yr 1 of sexual activity	2.1	2.2	0.63
Number of partners, yr 1 of sexual activity	1.9	2.0	0.78
No. of partners, lifetime	5.3	8.2	0.02
Condom use, first year of sexual activity: % (n)			
Never	29 (48)	46 (17)	0.33
One fourth of the time	20 (34)	22 (8)	
One half of the time	12 (19)	8 (3)	
Three fourths of the time	13 (21)	8 (3)	
All of the time	26 (42)	16 (6)	
Current smoker: % (n)	38 (64)	49 (18)	0.23
Current gonorrhea: % (n)	9 (16)	0 (0)	0.05
Current *Chlamydia* infection: % (n)	10 (17)	5 (2)	0.39

tively. Overall prevalence of HPV was 19.2% (37/208; 30 subjects with positive ViraPap test result, 7 of whom had a Pap smear consistent with HPV infection). Distribution of HPV types included 7 subjects with types 6/11 (23.3%), 13 with types 16/18 (43.3%), 9 with types 31/33/35 (30.0%), and 1 untypeable (3.3%). Of those women with test results positive for HPV, 16 had normal Pap smears, 3 had atypia, 16 had mild dysplasia, and 2 had moderate dysplasia. Overall rates for gonorrhea and infection with *Chlamydia* were 7.7% and 9.1%, respectively.

The first set of analyses attempted to identify differences between female adolescents with (37 subjects) and those without (171 subjects) evidence of HPV infection. Mean age at menarche was 12.8 years (SD = 1.3) and 12.5 years (SD = 1.6) for subjects with and without HPV, respectively ($p = 0.30$). Mean age at first intercourse was 15.1 years (SD = 1.8) and 15.5 years (SD = 1.6) for subjects infected and those not infected, respectively ($p = 0.16$), with HPV.

The HPV-infected group reported more lifetime partners; the mean number of partners at time of enrollment for those in the HPV-infected group was 8.2, compared with 5.3 for those who were not infected ($p = 0.02$). At the time of screening, gonorrhea infections were found to be more frequent in the group without HPV infection (n = 16) than in those with HPV infection (n = 0; $p = 0.05$). There were no group differences with regard to chlamydial infections (Table I). No differences were found between HPV-infected and uninfected subjects in terms of age at study entry, race, and the following variables during the first year of intercourse: frequency of sex, number of sexual partners, condom use, or smoking. When lifetime smoking habits, history of STDs, and contraceptive practices were compared, no differences were found between those who were infected with HPV and those who were not.

The interval between menarche and first intercourse was found to be approximately 9 months less for HPV-infected subjects than for uninfected subjects (26.6 months compared with 35.7 months; $p = 0.02$). Potential associations of the interval between menarche and first intercourse and HPV infection were explored with arbitrary categories of 6- to 12-month intervals presumed to have biologic relevance (the number of subjects whose first intercourse was within 6 months of menarche was too small to allow meaningful comparison). When intervals between those with and those without HPV infection were compared, shorter intervals were found more frequently in the infected group. Of the HPV-infected subjects, 27% (10/37) had first intercourse within 12 months of menarche and 38% (14/37) within 18 months of menarche, in comparison with 12% (21/171) and 21% (35/171) for the 12-month and 18-month intervals, respectively, in the uninfected group ($p = 0.02$ for both intervals). Twenty-six percent of HPV-infected subjects had an interval of less than 24 months, compared with 35% of uninfected subjects. Seventy-three percent and 87% of HPV-infected subjects had intercourse within 36 or 48 months of menarche, compared with 53% and 77% of uninfected subjects (Table II).

Analyses showed that lifetime sexual partners elevated

Table II. Cumulative sample size at specific intervals between menarche and first intercourse, in HPV-uninfected (HPV^-) and HPV-infected (HPV^+) subjects

	Interval (mo) between menarche and first intercourse*	Cumulative sample size for each interval†											
		≤12 mo		≤18 mo		≤24 mo		≤36 mo		≤48 mo		>48 mo	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
HPV^- (n = 171)	35.7 (20.9)	21	12	35	21	59	35	91	53	132	77	171	100
HPV^+ (n = 37)	26.7 (22.9)	10	27	14	38	17	46	27	73	32	87	37	100
(*p* Value)	(0.02)	(0.02)		(0.02)		(0.19)		(0.03)		(0.21)		—	

*Values are expressed as mean (SD).
†Each column represents the cumulative sample size for each given interval period between menarche and first sex.

Table III. Multivariate predictors of HPV infection status for lifetime sexual partners and at intervals between menarche and first sexual intercourse

	Multivariate predictors					
	Lifetime partners	<12 mo	<18 mo	<24 mo	<36 mo	<48 mo
Beta coefficient	0.05*	0.90*	0.79*	0.45	0.79*	0.51*
Odds ratio†	1.1	2.5	2.2	1.6	2.2	1.7
Confidence interval (95%)	1.01-1.2	1.6-3.4	1.4-3.0	0.9-2.3	1.4-3.0	0.7-2.7

Lifetime sexual partners and a categorical variable representing interval between menarche and first intercourse were entered simultaneously in five separate regression equations. Categorical variables were coded to compare those intervals under the specified period (e.g., <12 months, <18 months) with those intervals longer than the specified time period (e.g., >12 months, >18 months).
*$p < 0.05$.
†Odds ratios represent the increased risk among those with intervals shorter than specific period (e.g., <12 months).

the odds ratio for HPV infection, independent of the interval between menarche and first intercourse (odds ratio = 1.1; confidence interval = 1.01 to 1.2). Each additional sex partner added about 10% to the risk of HPV infection. Five multiple logistic regression models assessed the independent contributions for HPV infection with the interval between menarche and first intercourse (≤12 months, ≤18 months, ≤36 months, ≤48 months) and lifetime partners. The odds of HPV infection were significantly elevated for adolescents with first intercourse within 12 months, within 18 months, and within 36 months of menarche, in comparison with those who had longer intervals between menarche and first intercourse (Table III). Thus adolescents with shorter intervals between menarche and sexual debut were at more than twice the risk of acquiring HPV infection.

DISCUSSION

We found that adolescent females with HPV infection have an average interval between menarche and first intercourse that is 9 months less than those without HPV infection. These findings are strongest and most easily interpretable for intervals of less than 18 months, which may represent the period of greatest developmental susceptibility of the cervix to sexually transmitted organisms, if such susceptibility exists. Such an assumption is supported by the finding that the relation between the menarche and first intercourse interval and HPV infection appears to weaken at about 2 years. It is likely that other important HPV risk factors—such as the accumulation of sexual partners—subsequently become more important predictors of infection. It does not appear that a shorter interval between menarche and first intercourse is simply a marker for other risky sexual behaviors.

Several studies support the suggestion that the interval between menarche and first intercourse is an important risk marker for STDs, including HPV infection. A recent study of adult women found that the development of CIN stages 2 and 3 was associated with younger age at first intercourse.[14] A study from Ethiopia, where child marriage is common, found a significant increase in rates of STDs and cervical cancers among those who were sexually active be-

fore menarche.[15] Cervical ectopy has been associated with infection by *Chlamydia trachomatis*,[16, 17] CIN,[9, 18] and human immunodeficiency virus.[19] Cervical ectopy is greatest during puberty and is inversely correlated with age.[16, 20, 21] Although ectopy may persist well into adulthood, initiation of intercourse during a time of active change, or when less cervical mucus is present to protect columnar epithelium, or at times when surface area is greatest, may increase the risk of infection. The mechanism by which "cervical immaturity" may increase HPV risk is not understood. Cyclic progesterone (a result of ovulation and thus present in late puberty) stimulates the production of cervical mucus, which results in a protective barrier against infectious agents. For most adolescent women, regular cyclic ovulation occurs 12 to 18 months after menarche, although it may be delayed for as long as 5 years.[22] Some possibilities include increased susceptibility to minor trauma during intercourse, incompletely developed immune responses, or cervical cell membrane differences that allow enhanced interaction between the infecting virus and its target cell. Some data indicate that a substantial proportion of HPV-infected adolescents have resolution of their infections or at least lose the ability for the infection to be detected with time[23]; it is also possible that adolescents infected soon after menarche are less able to resolve these infections than those infected at a later time. Our study cannot distinguish among these potential mechanisms.

Several limitations apply to the results of this study. First, we have no proof that the HPV infection that we detected occurred during the hypothesized period of increased biologic vulnerability. We did explore the possibility that a longer interval between sexual debut and enrollment in the study would allow greater potential for exposure to HPV, but no differences in the interval were noted for the HPV-infected and the uninfected groups. Second, a relatively insensitive method (compared with other DNA detection tests) of determining HPV was used. Polymerase chain reaction, a more sensitive method, might have detected infections otherwise missed in this study. In addition, cytologic diagnosis of cervical HPV can be misleading; Kiviat et al.[24] showed that fewer than half of women with koilocytosis have test results positive for HPV DNA. Although this finding may have resulted from the presence of HPV types not tested for, as with our study, the potential for misclassification of cases may exist. Third, subjects enrolled in this study are not representative of a general adolescent population; likewise, all potentially eligible clinic patients were not enrolled because of limitations of clinician availability. Although some reassurance about the representativeness of the sample may be derived from the comparability of the average age at menarche in the United States,[25] the possibility of selection bias cannot be completely dismissed.

The effect of the postulated cervical vulnerability to HPV infection was therefore significant but may not be absolute; many other factors may be equally as important in determining the risk of HPV infection among female adolescents. However, given the relative imprecision of our measure of cervical maturity and the inability to date precisely the infection relative to cervical maturity, the role of cervical maturity in terms of HPV infection risk may be significant. Prospective studies should be undertaken to validate cervical immaturity as a risk factor, and to determine whether cervical immaturity can be more clearly defined to allow intervention with hormonal manipulation or by accelerating the process of squamous cell metaplasia. There may be a target population at high risk in whom barrier methods should remain as an absolute necessity, in addition to other, biologic manipulations.

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REFERENCES

1. Rosenfeld WD, Vermund SH, Wentz SJ, Burk RD. High prevalence rate of human papillomavirus infection and association with abnormal Papanicolaou smears in sexually active adolescents. Am J Dis Child 1989;143:1443-7.
2. Hildesheim A, Gravitt P, Schiffman MH, et al. Determinants of genital human papillomavirus infection in low-income women in Washington, D.C. Sex Transm Dis 1993;20:279-85.
3. Sadeghi SB, Hsieh EW, Gunn SW. Prevalence of cervical intraepithelial neoplasia in sexually active teenagers and young adults. Am J Obstet Gynecol 1984;148:726-9.
4. Zabin LS. The association between smoking and sexual behavior among teens in U.S. contraceptive clinics. Am J Public Health 1984;74:261-3.
5. Greenberg J, Magder L, Aral S. Age at first coitus: a marker for risky sexual behavior in women. Sex Transm Dis 1992; 19:331-4.
6. Singer A. The uterine cervix from adolescence to the menopause. Br J Obstet Gynaecol 1975;82:81-99.
7. Spitzer M, Krumholz BA. Human papillomavirus–related diseases in the female patient. Urol Clin North Am 1992;19:71-82.
8. Report of the Task Force of the Department of Health and Welfare of Canada. Cervical cancer screening programs. Summary of the 1982 Canadian Task Force. Can Med Assoc J 1982;127:581-9.
9. Moscicki AB, Winkler B, Irwin CE, Schacter J. Differences in biologic maturation, sexual behavior, and sexually transmitted disease between adolescents with and without cervical intraepithelial neoplasia. J PEDIATR 1989;115:487-93.
10. Bauer HM, Ting Y, Greer LE, et al. Genital human papillomavirus infection in female university students as determined by PCR-based method. JAMA 1991;265:472-7.
11. Gilger JW, Geary DC, Eisele LM. Reliability and validity of retrospective self-reports of the age of pubertal onset using twin, sibling, and college student data. Adolescence 1991;26:41-53.

12. Lorincz AT. Human papillomavirus testing. Diagn Clin Test 1989;27:28-37.
13. Norusis MJ. SPSS for Windows: release 6.0. Chicago: SPSS Inc., 1993.
14. Koutsky LA, Holmes KK, Critchlow CW, et al. A cohort study of the risk of cervical intraepithelial neoplasia grade 2 or 3 in relation to papillomavirus infection. N Engl J Med 1992; 327:1272-8.
15. Duncan ME, Tibaux G, Pelzer A, et al. First coitus before menarche and risk of sexually transmitted disease. Lancet 1990; 335:338-40.
16. Harrison HR, Phil D, Costin M, et al. Cervical *Chlamydia trachomatis* infection in university women: relationship to history, contraception, ectopy and cervicitis. Am J Obstet Gynecol 1985;153:244-51.
17. Arya OP, Mallinson H, Goddard AD. Epidemiological and clinical correlates of chlamydial infection of the cervix. Br J Vener Dis 1981;57:118-24.
18. Guijon FB, Paraskevas M, Brunham R. The association of sexually transmitted diseases with cervical intraepithelial neoplasia: a case-control study. Am J Obstet Gynecol 1985; 151:185-90.
19. Moss GB, Clemetson D, D'Costa L, et al. Association of cervical ectopy with heterosexual transmission of human immunodeficiency virus: results of a study of couples in Nairobi, Kenya. J Infect Dis 1991;164:588-91.
20. Goldacre MJ, Loudon N, Watt B, et al. Epidemiology and clinical significance of cervical erosion in women attending a family planning clinic. BMJ 1978;1:748-50.
21. Gottardi G, Gritti P, Marzi MM, Sideri M. Colposcopic findings in virgin and sexually active teenagers. Obstet Gynecol 1984;63:613-5.
22. Sanfilippo JS, Hertweck SP. Menstruation. In: Friedman SB, Fisher M, Schonberg SK, eds. Comprehensive adolescent health care. St. Louis: Quality Medical Publishing, 1991:917-46.
23. Moscicki AB, Palefsky JM, Gonzales J, Smith G, Schooluik GK. Colposcopic and histologic findings and human papillomavirus (HPV) DNA test variability in young women positive for HPV DNA. J Infect Dis 1992;166:951-7.
24. Kiviat NB, Koutsky LA, Paavoren JA, et al. Prevalence of genital papillomavirus infection among women attending a college student health clinic or a sexually transmitted disease clinic. J Infect Dis 1989;159:293-302.
25. Brookman RR. Contraceptive technology and practice. In: Friedman SB, Fisher M, Schonberg SK, eds. Comprehensive adolescent health care. St. Louis: Quality Medical Publishing, 1991:1016-25.

EXHIBIT 8

Cervical Intraepithelial Neoplasia

The Role of Age at First Coitus in Its Etiology

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A case-control study was done on 115 women attending a colposcopy clinic. All the patients had definitive histologic confirmation of cervical intraepithelial neoplasia (CIN). A specially designed questionnaire sought information about their age, age at first coitus, gravidity, ethnic origin, religion and social class. Cases and controls were closely matched for age and the last three parameters mentioned above. There was no statistical difference between nulliparas and multiparas in the incidence of CIN. The time interval between age at first coitus and the diagnosis of CIN varied widely, with 47 years the maximum. Statistically significant differences existed between the age at first coitus for cases and controls under and over age 18. The estimated relative risk was 3.64-fold higher in those under 18 than in those 18 or over at first coitus.

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Introduction

Cervical intraepithelial neoplasia (CIN) is believed to be the earliest identifiable form of a spectrum of disease in which the end stage is invasive cervical cancer. Speculations about the etiologic role of sexuality followed a physician's observation[1] that cervical cancer was uncommon in nuns, implying that marriage or coitus was culpable. Subsequently, large epidemiologic studies[2-5] have implicated sexuality as the initiator of a sequence of multistage events that destabilize the healthy cervix and culminate in cervical cancer. Since those studies were done there has been an endless search for coital factors. Some of those suggested are age at the first episode of sexual intercourse, coital frequency, multiple sexual partners, number of pregnancies, early marriage, menstrual hygiene, male circumcision and sexual practices linked to sociocultural and religious practices.

The current consensus points in the direction of age at first coitus and multiple sexual partners as important biologic variables in the etiology of cervical cancer. Previous investigators[3-7] found increased significant risk factors for cervical cancer in women with an early age at first coitus, from age 17 to 20. Whereas there is much information on the importance of age at first sexual intercourse and the development of cervical cancer, there is a dearth of information on that etiologic factor and CIN, a precursor of cervical cancer. The role of age at first coitus has often been assumed or extrapolated from the available data on cervical cancer. This study examined the significance of age at first coitus and its implication for CIN.

Materials and Methods

Between July 1981 and December 1984, 115 women with a histologically confirmed diagnosis of CIN were seen at the colposcopy clinic of the Royal Liverpool Hospital. All histologic diagnoses were made by the same pathologist. The correlation between colposcopically directed cervical biopsy and definitive histology was 91%. The patients were usually referred to the colposcopy clinic because of abnormal cervical cytology; postcoital, postmenopausal vaginal bleeding; or an unusual vaginal discharge. Twenty-three percent of the patient population at our colposcopy service is referred by the hospital's department of genitourinary medicine.

A control group of 100 women, also attending our gynecologic service, was selected randomly within three months, as much as possible, of the initial diagnosis of CIN. Those women had had at least two recent reports of normal cervical cytology. The control

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group was being seen for other gynecologic indications. A few hysterectomy patients who were initially enrolled in the study were eliminated from it when histologic evidence of CIN was found.

Cases and controls were interviewed by the author about their age, age at first coitus, gravidity, religion, ethnicity and social class. The data were then recorded in a specially designed form. Patients and controls were closely matched, within five years of age, for social class, religion and ethnic origin.

The χ^2 test was used for statistical analysis of the data.

Results

One woman had her first coitus at age 14. Another had not experienced coitus until age 37; she developed CIN III (carcinoma *in situ*) of the vaginal vault when she was 64. It was a residual lesion that followed a total abdominal hysterectomy and bilateral salpingo-oophorectomy for CIN III some two years earlier. One patient's husband was treated for penile herpes during the study period.

The highest numbers of pregnancies in patients with CIN I, II and III were five, six and ten, respectively (Table I). There was no statistical difference in the incidence of CIN in nulliparous women when compared to those who had had two previous pregnancies.

The median interval from age at first coitus to diagnosis of CIN varied from 9 to 14 years with a progression from CIN I to III (Table II). There was a progressive increase, 2.5 years, in the median interval between the diagnosis of CIN I, II and III.

Under age 18 there was a preponderance of women in the CIN group as compared to the control group (Table III). Both groups were uniform thereafter up to age 20, when there were more in the control category.

Table I *Gravidity of Patients with Cervical Intraepithelial Neoplasia*

Gravidity	No. of patients with cervical intraepithelial neoplasia I	II	III	Total
0	6	11	6	23*
1	4	4	10	18
2	3	6	18	27*
3	1	3	9	13
4	—	4	17	21
≥5	2	3	8	13
Total	16	31	68	115

*$\chi^2 = .59$, $P > .50$.

Table II *Time Interval Between First Coitus and Diagnosis of Cervical Intraepithelial Neoplasia*

Type of cervical intraepithelial neoplasia	No. of patients	Time range (yr)	Interval median (yr)
I	16	3–23	9.0
II	31	0–30*	11.5
III	68	3–47	14.0

*One patient was confirmed as having cervical intraepithelial neoplasia II the same year as her first coitus, at age 16.

The smaller percentage of those under 15 in both groups was in accordance with our expectations. Although the range and mean values appeared to be identical in the two groups, the uneven spread of data on women under 18 rendered them meaningless.

A comparison of the incidence of CIN in women who had their first coitus before and after age 18 in the CIN and control groups revealed statistical significance ($P < .05$) (Table IV). The estimated relative risk of the development of CIN in those who had their first coitus before age 18 was 3.64 as compared to the risk in those over 18.

Discussion

This study was restricted to one biologic variable, age at first coitus, as compared to early marriage, multiple marriages, multiple sexual partners, premarital pregnancies and so forth, all associated with socioeconomic factors. All those sociocultural variables appear to depend on age at first coitus in adolescence.[8] The other main reason for the choice of this biologic variable was that it is a milestone in the life of most women and can be recalled easily, although sometimes such memories are unpleasant. It is more difficult to recall such events as coital frequency and number of sexual partners over a long period. Moreover, the moral implications of such information will deter many women from divulging it, especially if they are married.

This study, like two previous ones,[5,9] used hospital patients and controls, unlike a third study,[10] which had neighborhood controls. However, in the last case the controls were chosen from among women who had no past history of cancer. Unfortunately, such a selection of controls could not adequately exclude women who did not have CIN. The use of hospital patients and controls ensured that such patients were sufficiently motivated to provide reliable data that could be relevant to their care. Eliciting that information from the neighborhood or the community poses ethical issues, and the validity of such data becomes

Table III *Age at First Coitus in the Cervical Intraepithelial Neoplasia and Control Groups*

Group	Age at first coitus (yr)							Range (yr)	Mean (yr)
	15	16	17	18	19	20	21		
Cervical intraepithelial neoplasia (no. of patients)	6	18	21	24	13	10	23	14–37	18.3
Control (no. of patients)	2	6	7	21	12	26	26	14–34	18.4

questionable because of the tendency to suppress such information. Although a selection from the community may be more representative as a control group, the reliability of such data is in doubt in view of the peculiarity of the information sought.

The close matching of cases and controls for age, social class, ethnic origin and religion made this study fairly representative of the reference population. The use of controls who had at least two recent normal cervical cytology smears in this study ensured that the controls were indeed normal. The value of paired cervical smears in the improved detection of CIN is recognized.[11,12]

Our findings show that the interval between age at first coitus and the time of CIN diagnosis varied widely. Some patients developed a CIN lesion the same year as the first coitus; in others the interval was as long as 47 years. The time interval between first coitus and CIN diagnosis varies because it depends on when the patient sees a physician, and that is subject to considerable individual variation. Crude as the statistics may be, they certainly are a rough guide and accentuate the variable nature of disease progression. (Most CIN is asymptomatic and often is an incidental discovery on cervical cytology.) In a similar study[5] the interval between age at first coitus and CIN diagnosis ranged from 21 to 23 years for CIN and microinvasive cancer. Those figures compare favorably with the findings in this study—a range of 9–29 years, with a median of 14. However, the other study suffered from a defective definition of the first coitus–CIN diagnosis intervals. The investigators' estimate of the interval, based on the time of marriage or first conception, was fraught with error since a good percentage of their study population had engaged in premarital coitus, and the age at first coitus, at marriage and at first pregnancy rarely are the same.

It is tempting to postulate that the median interval between age at first coitus and the development of CIN I is 9 years, with a progressive, 2.5-year increase for each degree of progression from CIN I through III. The obvious limitation of that hypothesis is the varied time interval until the CIN diagnosis. The precise mechanism by which that biologic variable, early age at first coitus, predisposes to CIN remains enigmatic. Studies on cervical cancer [3-7] have indicated that the critical age at first coitus seems to vary between 17 and 20. The earlier the age at first coitus, the higher the risk factor. However, only a few women in most cultures are sexually active before adolescence. It is thought that the increased mitotic activity that is part of the physiologic growth of the adolescent cervix makes the cervix particularly vulnerable to the initiation of carcinogenesis, given the appropriate agent. This projected accentuated risk for the adolescent cervix ought to have some implications for sexuality in pregnancy, when, again, the cervix undergoes increased biologic activity. It seems more probable that coitus is the vehicle for transmitting some as-yet-unidentified carcinogen.

That our department of genitourinary medicine contributed the bulk of our colposcopy clinic patients supports the concept of cervical cancer as a sexually transmitted disease. It is thought that a sexually transmissible oncogenic agent, probably viral, initiates the series of changes that culminates in cervical cancer after a latency period, which is indicated by CIN.

Previous seroepidemiologic studies[13,14] have linked herpes simplex virus (HSV-2) with CIN and cervical cancer. The significance of the single case in this study—a patient who had CIN III and a husband who was being treated for penile herpes—remains uncertain. The inconsistency of isolating HSV-2 from women with CIN and cervical cancer has led to doubt about the role of HSV-2. The current focus is on human papillomavirus (HPV) as the most likely culprit[15] in CIN and cervical cancer. The ubiquitousness of HPV in the genital tract and its frequent associatio

Table IV *Age at First Coitus*

Group	< 18 yr (no. of patients)	> 18 yr (no. of patients)	Total
Control	15	85	100
Cervical intraepithelial neoplasia	45	70	115
Total	60	155	215

$\chi^2 = 5.28$, $P < .05$.

30%) with vulvar condylomata plus CIN[16] suggest a role for HPV in carcinogenesis. Further evidence[17-18] implicating HPV in 30–66% of CIN and 90% of cervical cancer has been found. The increasing role of the male partner in the transmission of HPV-induced CIN is recognized.[19] Similarities in the clinical behavior patterns of HPV and CIN have been demonstrated; the only difference is that HPV antedates CIN by about ten years.[20,21] Our finding of a median interval of 9–14 years between the age at first coitus and the development of CIN I–III is compatible with the concept of probable HPV transmission during coitus and its preceding CIN by about a decade.

Several studies[3-7] have implicated age at first coitus as an important etiologic factor in cervical cancer. Few studies have investigated age at first coitus and CIN. Our finding of significant differences between the cases and controls in age at first coitus under and over age 18 is consistent with those of a previous author.[10] Although the populations studied were different, the sexual behavior patterns appear similar.

It is usually thought that the etiologic factors operative in cervical cancer, by a process of natural extension, will also influence CIN since the latter is a known precursor of the former. However, not all CIN will progress to overt cervical cancer,[22,23] thereby suggesting the possibility of different pathways of carcinogenesis. The pathway from CIN to cervical cancer may involve multiple etiologic factors, including host immune mechanisms. The interplay of various coital factors—age at first coitus, multiple sexual partners, etc., and such diverse factors as smoking habits in women—defies any postulate. Current thinking involves the possibility of an infectious cause.

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References

1. Rigoni-Stern D: Fatti statistici relativi alle malatie cancerose. Giorn Serv Progr Pathol Terap 2:507, 1842
2. Gagnon F: Contribution to the study of the etiology and prevention of cancer of the uterus. Am J Obstet Gynecol 60:516, 1950
3. Wynder EL, Cornfield J, Schroff PD, et al: A study of environmental factors in cancer of the cervix. Am J Obstet Gynecol 68:1016, 1954
4. Rotkin I, King RW: Environmental variables related to cervical cancer. Am J Obstet Gynecol 83:720, 1962
5. Aitken-Swan J, Baird D: Cancer of the uterine cervix in Aberdeenshire: Aetiological aspects. Br J Cancer 20:642, 1966
6. Terris M, Oalmann MC: Carcinoma of the cervix: An epidemiologic study. J Am Med Assoc 174:1847, 1960
7. Rotkin ID: Relation of adolescent coitus to cervical cancer risk. J Am Med Assoc 179:486, 1962
8. Rotkin ID: A comparison of key epidemiological studies in cervical cancer related to current searches for transmissible agents. Cancer Res 33:1353, 1973
9. Harris RWC, Brinton LA, Cowdell RH, et al: Characteristics of women with dysplasia or carcinoma-in-situ of the cervix uteri. Br J Cancer 42:359, 1980
10. Clarke EA, Hatcher J, Mckeown-Eyssen, et al: Cervical dysplasia: Association with sexual behavior, smoking, and oral contraception use? Am J Obstet Gynecol 151:612, 1985
11. Sedlis A, Walters AT, Balin H, et al: Evaluation of two simultaneously obtained cervical cytology smears. Acta Cytol 18:291, 1974
12. Davis JR, Hindmann WM, Paplanus SH, et al: Value of duplicate smears in cervical cytology. Acta Cytol 25:533, 1981
13. Nahmias HJ, Naib ZM, Josey WE: Epidemiological studies relating genital herpes to cervical cancer. Cancer 34:1111, 1974
14. Thomas DB, Rawls WE: Relationship of herpes simplex virus (HSV-2) antibodies in squamous dysplasia to cervical carcinoma in-situ. Cancer 42:2716, 1978
15. Gissmann L: Papillomaviruses and their association with cancer in animals and in man. Cancer Surv 3:161, 1984
16. Walker P, Singer A, Dyson J, et al: The natural history of cervical epithelial abnormalities in patients with vulval warts. Br J Vener Dis 59:327, 1983
17. McCance DJ, Walker PG, Dyson JL, et al: Presence of human papillomavirus DNA sequences in cervical intraepithelial neoplasia. Br Med J 287:784, 1983
18. Wagner D, Ikenberg H, Boehm N, et al: Identification of human papillomavirus in cervical swabs by deoxyribonucleic acid in situ hybridization. Obstet Gynecol 64:767, 1984
19. Campion M, Singer A, Clarkson P, et al: Increased risk of cervical neoplasia in consorts of men with penile condylomata acuminata. Lancet 1:943, 1985
20. Franceschi S, Doll R, Gallirey J, et al: Genital warts and cervical neoplasia: An epidemiological study. Br J Cancer 48:621, 1983
21. Syrjanen K, Vayrynen M, Saarikoski S, et al: Natural history of cervical human papillomavirus (HPV) infections based on prospective follow-up. Br J Obstet Gynaecol 92:1086, 1985
22. Richart RM: Natural history of cervical intraepithelial neoplasia. Mod Treatment 5:748, 1968
23. Stern E: Epidemiology of dysplasia. Obstet Gynecol Surv 24:711, 1969