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Updates in Cervical Cancer Screening

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Updates in Cervical Cancer Screening

From the 2019 ASCCP Management Guidelines and beyond

Sarah Cokenakes PGY3

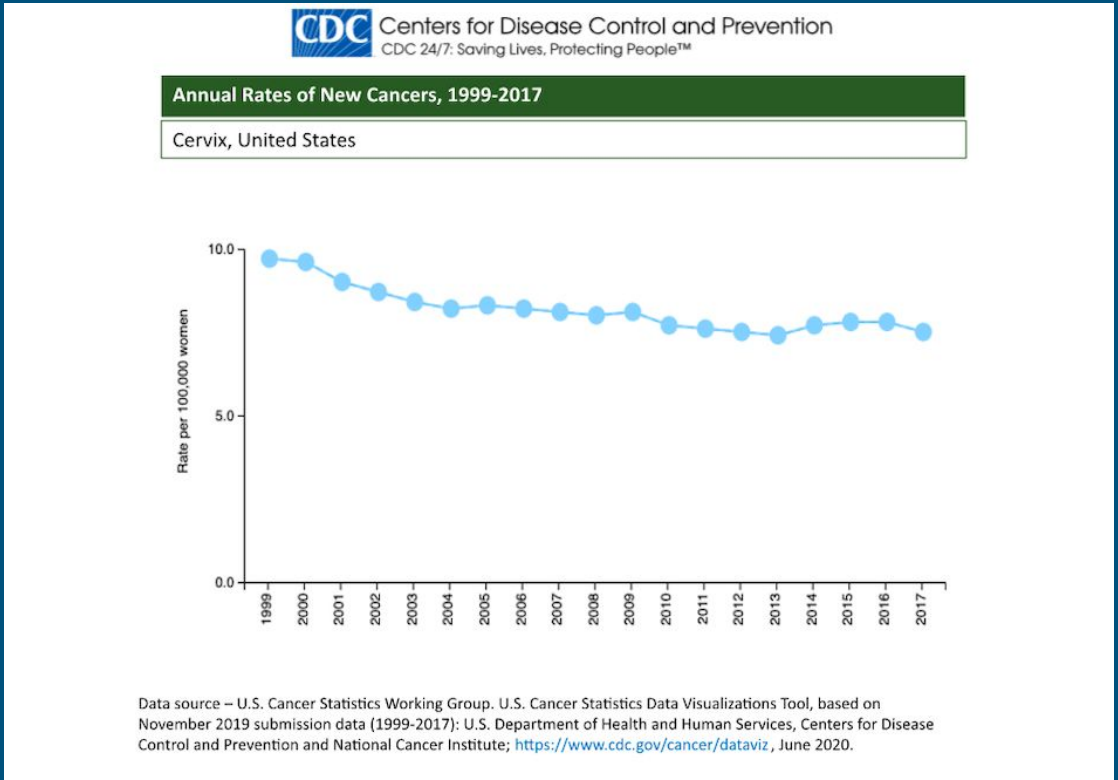
Disclosures

Learning Objectives

1. To review the incidence of cervical cancer in the United States and the relationship between the HPV virus and invasive cervical cancer.
2. To review the 2019 ASCCP guidelines and how they differ from 2012 guidelines.
3. To discuss use of technology to aid in appropriate decision making and management.

Cervical Cancer Background

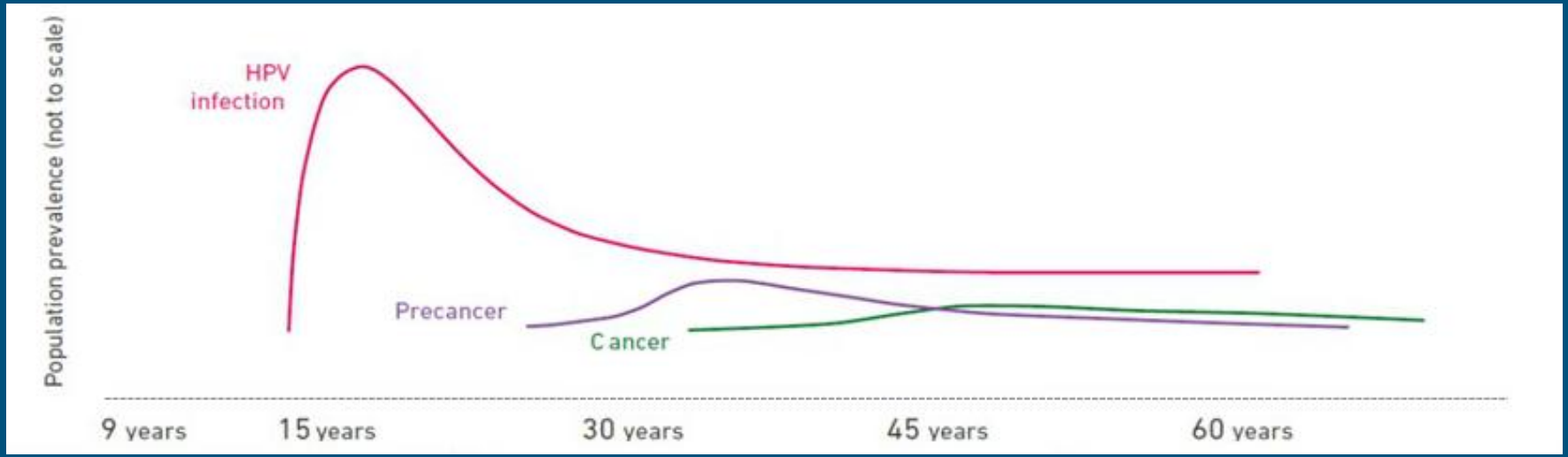
Cervical Cancer in the United States[2]



HPV and Cervical Cancer

High-risk HPV types are detected in >99% of cervical cancers.[4]

HPV16 and HPV18 are implicated in >70% of cervical cancers.[3]



HPV Vaccination

June 2006: Quadrivalent (6, 11, 16, 18) HPV vaccine approved. Gardasil, Merck.

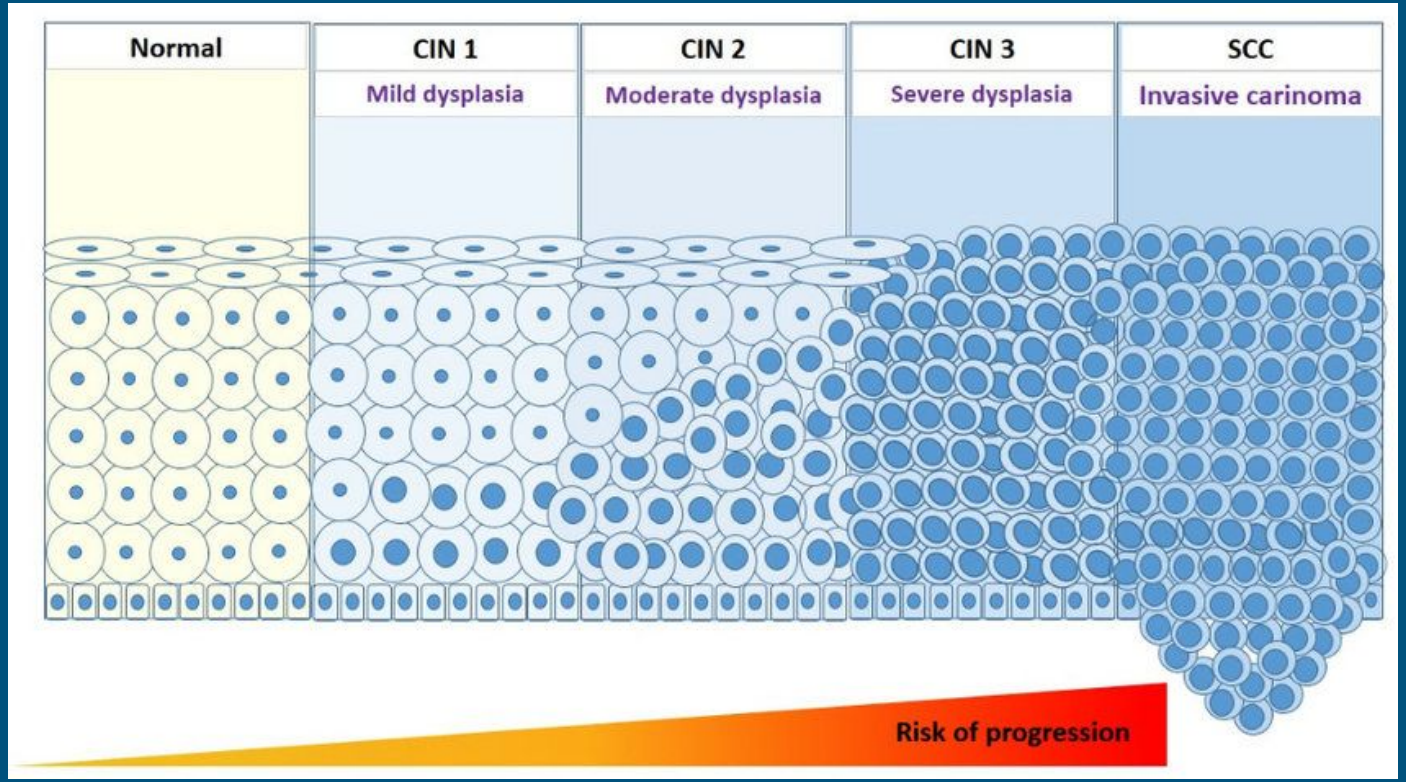
October 2009: Bivalent (16, 18) HPV vaccine approved. Cervarix, GlaxoSmithKline.

December 2014: 9-valent (6, 11, 16, 18, 31, 33, 45, 52, 58) HPV vaccine approved. Gardasil-9, Merck.

While vaccination against HPV in the United States is not as common as vaccination against other conditions, the projection is that rates of CIN3+ and cervical cancer will continue to decrease as our vaccinated cohort ages.

Quadrivalent HPV vaccine has been associated with a substantially decreased risk of invasive cervical cancer at a population level.[5]

Cervical Intraepithelial Neoplasia Progression



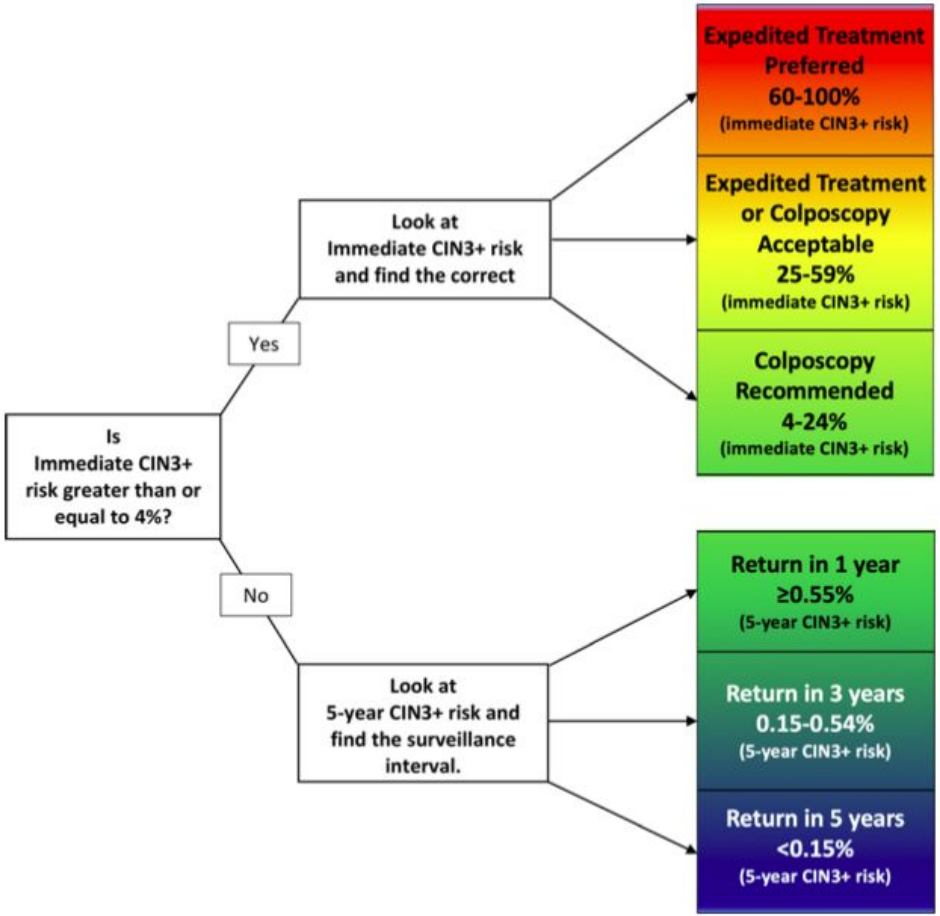
2012 ASCCP Consensus Guidelines[6]

- First cervical cancer screening guidelines to be based on the principle, “Equal management for equal risk.”
- However, 2012 guidelines still relied to some degree on complicated, result-based algorithms.
- “The key difference between 2019 guidelines and previous versions is the change from primarily test-results based algorithms to primarily risk-based guidelines.”

2019 ASCCP Guidelines

Essential Change #1

Recommendations are based on risk, not results.



FIGUR'E 1. **This figure demonstrates how patient risk is evaluated.** For a given current results and history combination, the immediate CIN 3+ risk is examined. If this risk is 4% or greater, immediate management via colposcopy or treatment is indicated. If the immediate risk is less than 4%, the 5-year CIN 3+ risk is examined to determine whether patients should return in 1, 3, or 5 years.

Case #1

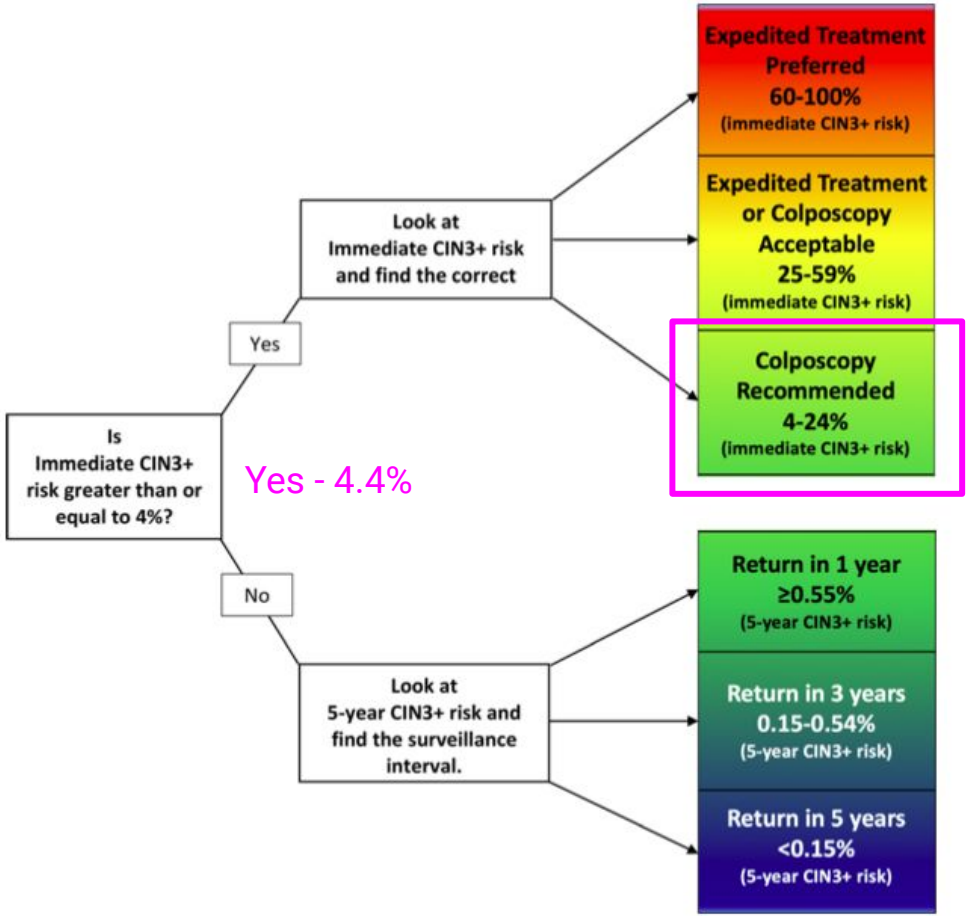
Patient A.A. is a 31y/o F who is seeing you as a new patient for an annual visit. She recently moved to Philadelphia from Georgia and does not have any of her previous records with her. She says that it has been at least 5 years since her last pap smear and does not remember if she has had any abnormal results in the past.

You perform co-testing in the office and the results are: HPV+, ASCUS.

What do you tell this patient for follow-up?

TABLE 1A: Immediate and 5-Year Risks of CIN 3+ for Abnormal Screening Results, When There Are No Known Prior HPV Test Results[1]

History	Current HPV result	Current cytology result	*n*	%	CIN 3+ cases	CIN 3+ immediate risk, %	CIN 3+ 5-year risk, %	Recommended Management	Recommendation confidence score, %
Unknown	HPV-negative	NILM	1,388,153	90	1,246	0.00	**0.12**	5-y follow-up	100
Unknown	HPV-negative	ASC-US	25,331	1.6	83	0.04	**0.40**	3-y follow-up	100
Unknown	HPV-negative	LSIL	3,300	0.21	47	1.1	**2.0**	1-y follow-up	100
Unknown	HPV-negative	ASC-H	791	0.05	26	3.4	3.8	Colposcopy[a]	Special situation
Unknown	HPV-negative	AGC	2,275	0.15	27	1.1	1.5	Colposcopy[a]	Special situation
Unknown	HPV-negative	HSIL+	183	0.01	43	**25**	27	Colposcopy/treatment	53
Unknown	HPV-negative	ALL[b]	1,420,033	92	1,472	0.01	**0.14**	5-y follow-up	95
Unknown	HPV-positive	NILM	63,541	4.1	1,798	**2.1**	**4.8**	1-y follow-up	100
Unknown	HPV-positive	ASC-US	30,506	2.0	1,378	**4.4**	7.3	Colposcopy	100
Unknown	HPV-positive	LSIL	23,659	1.5	1,008	**4.3**	6.9	Colposcopy	96
Unknown	HPV-positive	ASC-H	3,766	0.24	863	**26**	33	Colposcopy/treatment	82
Unknown	HPV-positive	AGC	977	0.06	254	26	35	Colposcopy/treatment[a]	80
Unknown	HPV-positive	HSIL+	3,980	0.26	1,700	**49**	53	Colposcopy/treatment	100
Unknown	HPV-positive	ALL[b]	126,429	8	7,001				
		Total[c]	1,546,462	100	8,473				



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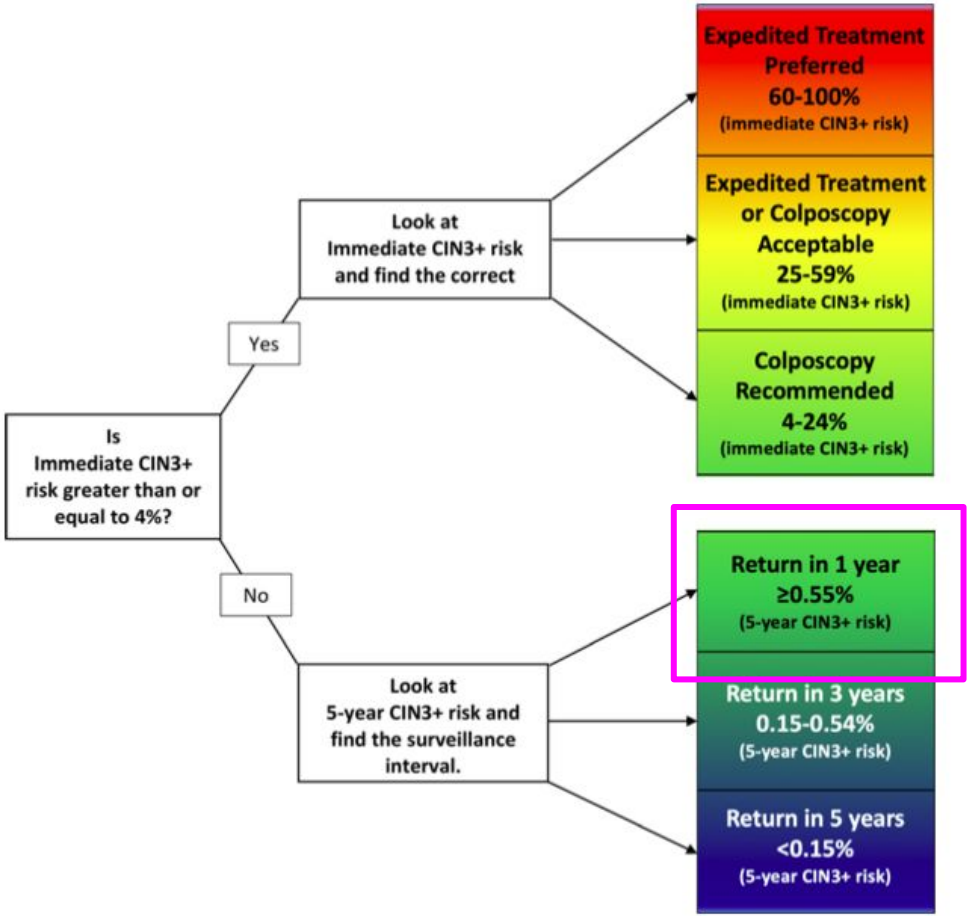
Colposcopy Results:

CIN1

What do you tell this patient for follow up?

Table 3: CIN 3+ 1-Year and 5-Year Risks Upon Receipt of Colposcopy/Biopsy Results[1]

History: Precolposcopy test result	Colposcopic biopsy diagnosis	*n*	%	CIN 3+ cases	CIN 3+ 1-y risk, %	CIN 3+ 5-y risk, %	Recommended management
HPV-positive NILM ×2	<CIN 1	7,082	6.9	120	0.56	**2.7**	1-y follow-up
HPV-positive ASC-US	<CIN 1	15,601	15	251	0.49	**3.2**	1-y follow-up
HPV-positive LSIL	<CIN 1	7,129	6.9	94	0.59	**2.1**	1-y follow-up[a] (special situation)
ASC-H	<CIN 1	1,644	1.6	51	**2.4**	**4.4**	1-y follow-up[a] (special situation)
AGC	<CIN 1	3,213	3.1	55	1.2	**1.6**	1-y follow-up[a] (special situation)
HSIL+	<CIN 1	338	0.33	16	**2.9**	**4.8**	1-y follow-up[a] (special situation)
HPV-positive NILM ×2	CIN 1	5,732	5.6	102	0.74	**2.8**	1-y follow-up
HPV-positive ASC-US	CIN 1	20,131	20	296	0.53	**2.6**	1-y follow-up
HPV-positive LSIL	CIN 1	18,254	18	242	0.74	**2.3**	1-y follow-up
ASC-H	CIN 1	2,131	2.1	70	**1.4**	**5.6**	1-y follow-up[a] (special situation)
AGC	CIN 1	947	0.92	22	1.3	**3.8**	1-y follow-up[a] (special situation)
HSIL+	CIN 1	809	0.78	33	**3.9**	**6.5**	1-y follow-up[a] (special situation)
—	CIN 2	12,094	12		NA	NA	Treatment
—	CIN 3	6,836	6.6		NA	NA	Treatment
—	AIS	531	0.51		NA	NA	Treatment
—	Cancer	656	0.64		NA	NA	Treatment
	Total	103,128	100	1,352			



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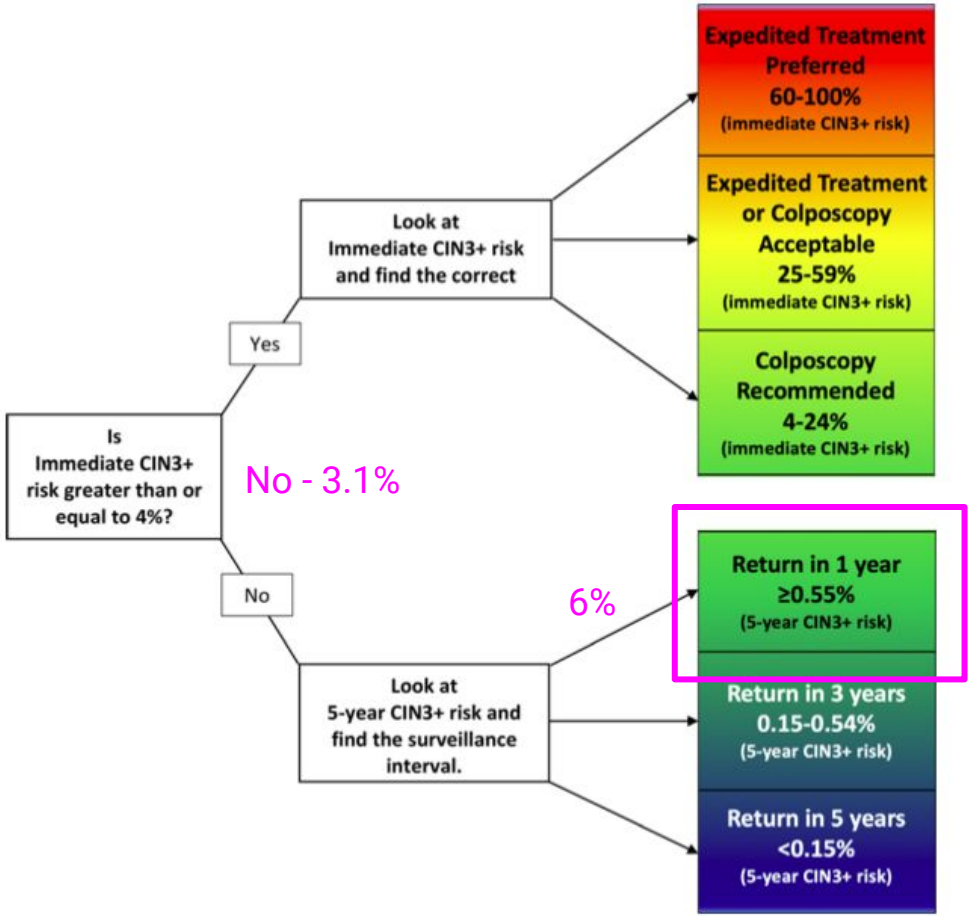
1 year follow up results:

HPV+ ASCUS

What do you tell this patient for follow up?

Table 4A: Immediate and 5-Year Risks of CIN 3+ Postcolposcopy at Which CIN 2+ Was Not Found, After Referral for Low-Grade Results[1]

History: precolposcopy test result	History: colposcopy result	Current HPV result	Current cytology result	*n*	%	CIN 3+ cases	CIN 3+ immediate risk, %	CIN 3 + 5-y risk, %	Recommended management	Recommendation confidence score, %
Low grade[a]	<CIN 2	HPV-negative	NILM	32,361	55	56	0.00	**0.42**	3-y follow-up	99
Low grade[a]	<CIN 2	HPV-negative	ASC-US/LSIL	2,937	5.0	14	0.05	**0.92**	1-y follow-up	93
Low grade[a]	<CIN 2	HPV-negative	High grade[b]	149	0.25	4	1.6	4.1	Colposcopy	Special situation
Low grade[a]	<CIN 2	HPV-negative	ALL[c]	35,603	60	74	0.01	**0.51**	3-y follow-up	73
Low grade[a]	<CIN 2	HPV-positive	NILM	9,352	16	272	**2.1**	**5.2**	1-y follow-up	100
Low grade[a]	<CIN 2	HPV-positive	ASC-US/LSIL	12,843	22	445	**3.1**	**6.0**	1-y follow-up	100
Low grade[a]	<CIN 2	HPV-positive	High grade[b]	1,294	2.2	276	**23**	31	Colposcopy	94
			Total[d]	58,936	100	1,067				



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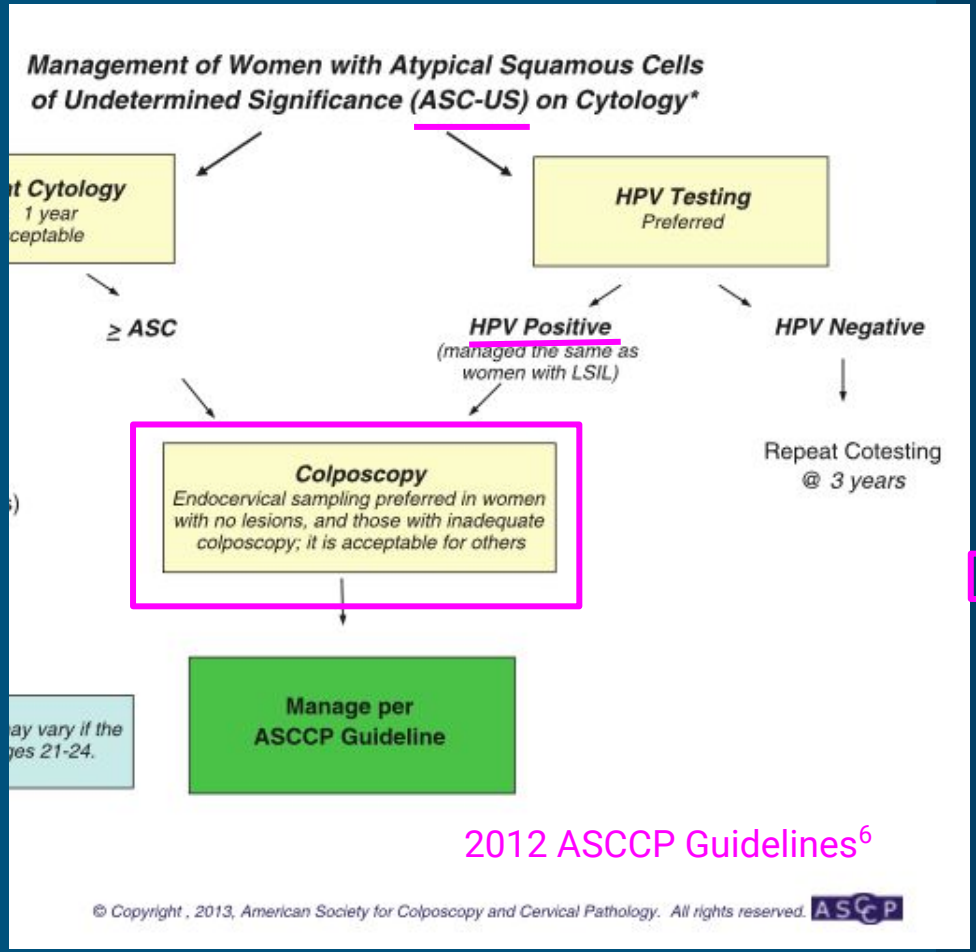
Essential Change #2

Repeat HPV testing or cotesting (rather than colposcopy) is recommended for patients with minor screening abnormalities indicating HPV infection with a low underlying risk of CIN3+.



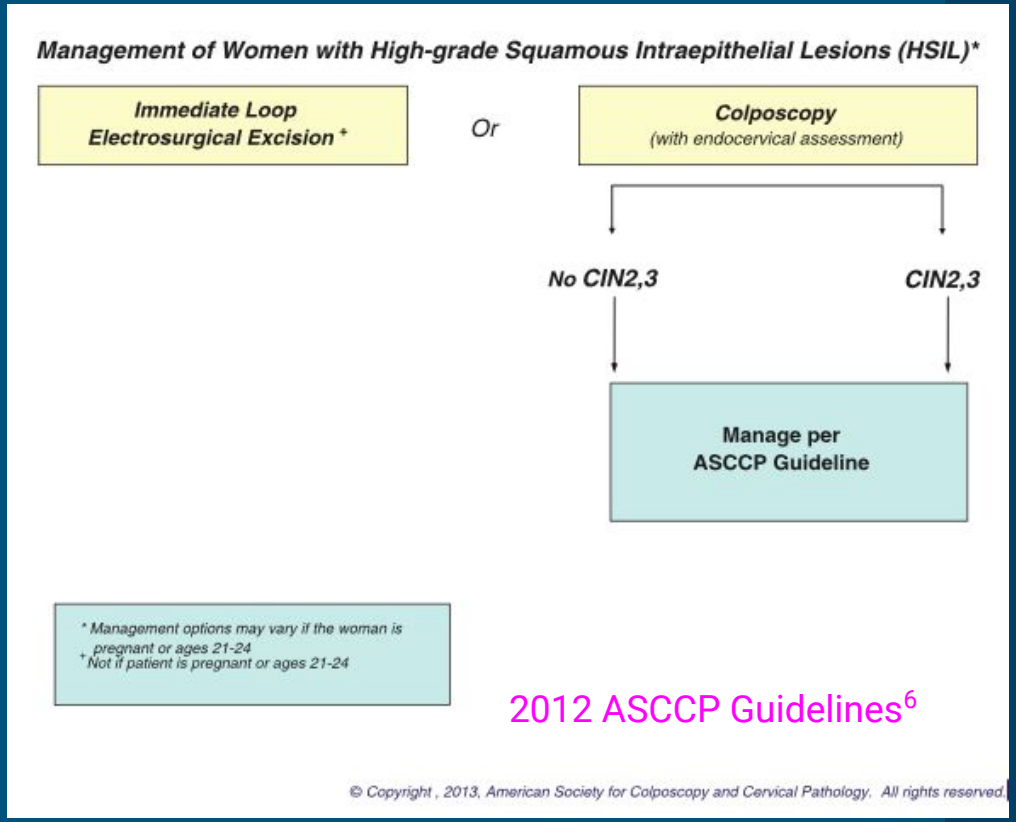
2012 ASCCP Guidelines[6]

2019 ASCCP Guidelines[1]

History	Current HPV result	Current cytology result	*n*	%	CIN 3+ cases	CIN 3+ immediate risk, %	CIN 3+ 5-year risk, %	Recommended management	Recommendation confidence score, %
HPV-negative	HPV-negative	NILM	769,908	94	410	0.00	**0.09**	5-y follow-up	100
HPV-negative	HPV-negative	ASC-US	14,372	1.8	43	0.01	**0.36**	3-y follow-up	100
HPV-negative	HPV-negative	LSIL	1,553	0.19	9	0.44	**0.79**	1-y follow-up	82
HPV-negative	HPV-negative	ASC-H	558	0.07	16	2.8	3.3	Colposcopy	Special situation
HPV-negative	HPV-negative	AGC	1,518	0.19	11	0.78	0.88	Colposcopy	Special situation
HPV-negative	HPV-negative	HSIL+	64	0.01	8	**14**	14	Colposcopy	98
HPV-negative	HPV-negative	ALL[a]	787,973	96	497	0.01	**0.10**	5-y follow-up	100
HPV-negative	HPV-positive	NILM	16,552	2.0	225	0.74	**2.3**	1-y follow-up	100
HPV-negative	HPV-positive	ASC-US	7,794	0.95	189	2.0	**3.8**	1-y follow-up	100
HPV-negative	HPV-positive	LSIL	5,990	0.73	143	2.1	**3.8**	1-y follow-up	100
HPV-negative	HPV-positive	ASC-H	633	0.08	77	**14**	18	Colposcopy	100
HPV-negative	HPV-positive	AGC	180	0.02	28	**14**	21	Colposcopy[b]	100
HPV-negative	HPV-positive	HSIL+	411	0.05	117	**32**	34	Colposcopy/treatment	100
		Total[c]	819,533	100	1,276				

Essential Change #3

Guidance for expedited treatment (treatment without colposcopic biopsy) is expanded.



2012 ASCCP Guidelines[6]

2019 ASCCP Guidelines[7]:

For non-pregnant patients age 25+

- Expedited treatment is preferred when the immediate risk of CIN 3+ ≥ 60%
- Expedited treatment is acceptable for those with immediate risk of CIN3+ between 25% and 60%
- Expedited treatment is preferred for patients with HSIL cytology an a concurrent +HPV16 genotype

Case #2

A 30y/o F presents to your office for routine cervical cancer screening. She has no history of abnormal paps. Her results return: HPV+, NILM. How do you counsel her regarding follow-up?

History	Current HPV result	Current cytology result	*n*	%	CIN 3+ cases	CIN 3+ immediate risk, %	CIN 3+ 5-year risk, %	Recommended Management	Recommendation confidence score, %
Unknown	HPV-negative	NILM	1,388,153	90	1,246	0.00	**0.12**	5-y follow-up	100
Unknown	HPV-negative	ASC-US	25,331	1.6	83	0.04	**0.40**	3-y follow-up	100
Unknown	HPV-negative	LSIL	3,300	0.21	47	1.1	**2.0**	1-y follow-up	100
Unknown	HPV-negative	ASC-H	791	0.05	26	3.4	3.8	Colposcopy[a]	Special situation
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Unknown	HPV-negative	ALL[b]	1,420,033	92	1,472	0.01	**0.14**	5-y follow-up	95
Unknown	HPV-positive	NILM	63,541	4.1	1,798	**2.1**	**4.8**	1-y follow-up	100
Unknown	HPV-positive	ASC-US	30,506	2.0	1,378	**4.4**	7.3	Colposcopy	100
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Unknown	HPV-positive	ASC-H	3,766	0.24	863	**26**	33	Colposcopy/treatment	82
Unknown	HPV-positive	AGC	977	0.06	254	26	35	Colposcopy/treatment[a]	80
Unknown	HPV-positive	HSIL+	3,980	0.26	1,700	**49**	53	Colposcopy/treatment	100
Unknown	HPV-positive	ALL[b]	126,429	8	7,001				
		Total[c]	1,546,462	100	8,473				

Case #2

She follows up with you in 1 year as you recommend. This time her results return: HPV+, HSIL. How do you counsel her?

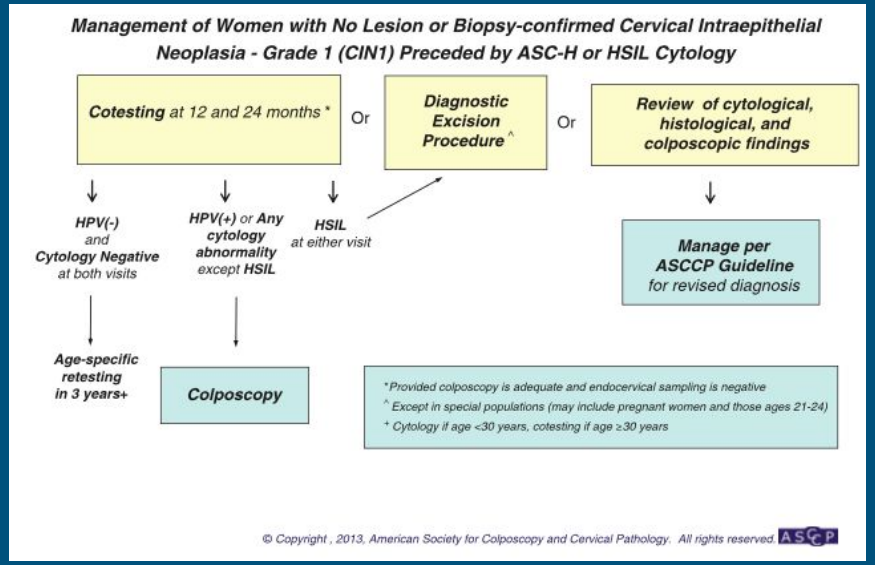
History	Current HPV result	Current cytology result	*n*	%	CIN 3+ cases	CIN 3+ immediate risk, %	CIN 3+ 5-y risk, %	Recommended management	Recommendation confidence score, %
HPV-positive NILM	HPV-negative	NILM	22,625	51	113	0.01	**0.90**	1-y follow-up	100
HPV-positive NILM	HPV-negative	ASC-US	585	1.3	11	0.35	**2.6**	1-y follow-up	100
HPV-positive NILM	HPV-negative	LSIL	114	0.26	2	2.3	**2.3**	1-y follow-up	71
HPV-positive NILM	HPV-negative	ASC-H	17	0.04	0	NA	NA	Colposcopy	Special situation
HPV-positive NILM	HPV-negative	AGC	41	0.09	3	**8.3**	8.3	Colposcopy[a]	83
HPV-positive NILM	HPV-negative	HSIL+	9	0.02	4	**44**	44	Colposcopy/treatment	71
HPV-positive NILM	HPV-negative	ALL[b]	23,391	53	133	0.06	**0.99**	1-y follow-up	100
HPV-positive NILM	HPV-positive	NILM	11,990	27	608	**4.1**	7.2	Colposcopy	60
HPV-positive NILM	HPV-positive	ASC-US	4,953	11	310	**5.4**	9.5	Colposcopy	100
HPV-positive NILM	HPV-positive	LSIL	2,733	6.2	153	**5.0**	8.5	Colposcopy	98
HPV-positive NILM	HPV-positive	ASC-H	654	1.5	134	**22**	29	Colposcopy	95
HPV-positive NILM	HPV-positive	AGC	204	0.46	67	**33**	40	Colposcopy[a]	99
HPV-positive NILM	HPV-positive	HSIL+	466	1.0	185	**44**	50	Colposcopy/treatment	100
HPV-positive NILM	Cotest negative ×2		10,522		16	0.0	**0.29**	3-y follow-up	84
HPV-positive NILM	Cotest negative ×3		5,457		5	0.0	**0.17**	3-y follow-up	56
	Total[c]		44,391	100	1,590				

Essential Change #4

Excisional treatment is preferred over ablative treatment for histologic HSIL. Adenocarcinoma in situ should be removed via excision.

Essential Change #5

Observation is preferred to treatment for CIN1.



2012 ASCCP Guidelines[6]

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HPV-positive ASC-US	<CIN 1	15,601	15	251	0.49	**3.2**	1-y follow-up
HPV-positive LSIL	<CIN 1	7,129	6.9	94	0.59	**2.1**	1-y follow-up[a] (special situation)
ASC-H	<CIN 1	1,644	1.6	51	**2.4**	**4.4**	1-y follow-up[a] (special situation)
AGC	<CIN 1	3,213	3.1	55	1.2	**1.6**	1-y follow-up[a] (special situation)
HSIL+	<CIN 1	338	0.33	16	**2.9**	**4.8**	1-y follow-up[a] (special situation)
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HPV-positive LSIL	CIN 1	18,254	18	242	0.74	**2.3**	1-y follow-up
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—	CIN 3	6,836	6.6		NA	NA	Treatment
—	AIS	531	0.51		NA	NA	Treatment
—	Cancer	656	0.64		NA	NA	Treatment
	Total	103,128	100	1,352			

2019 ASCCP Guidelines[1]

Essential Change #6

Addresses the use of primary HPV testing!

“When primary HPV screening is used, performance of an additional reflex triage test (e.g. reflex cytology) for all positive HPV tests regardless of genotype is preferred.”

“Use of primary HPV screening will likely increase in the future, as it is more effective than screening with cytology alone and performs similarly to and with lower costs than screening with co-testing.” [7]

Who is eligible for primary HPV testing?

2015 Interim Clinical Guidance from ASCCP, ACS, ASCP[8]:

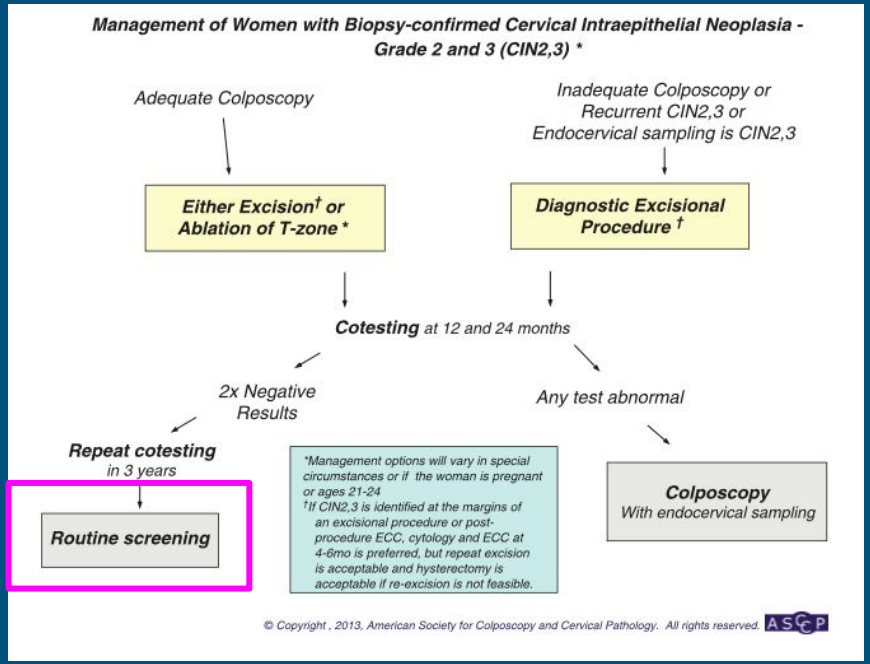
Primary hrHPV screening should not be initiated before 25 years of age.

2020 ACS Recommendations[9]:

The ACS recommends the primary HPV test as the preferred test for cervical cancer screening for people 25-65 years of age.

Essential Change #7

Addresses surveillance with HPV testing or co-testing after treatment of histologic HSIL, CIN2, CIN3 or AIS.

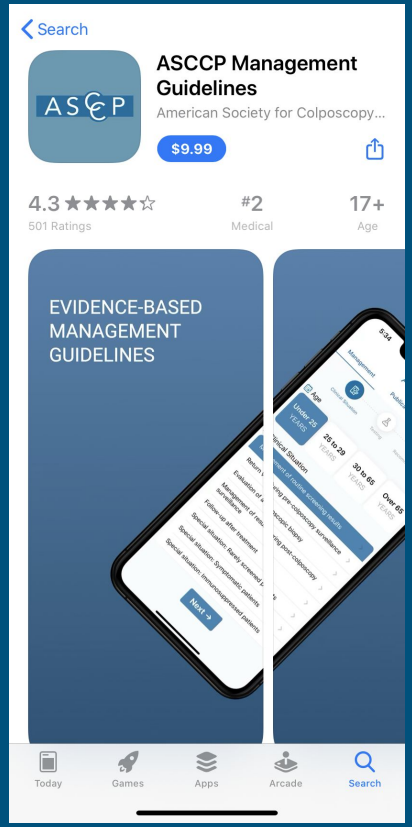


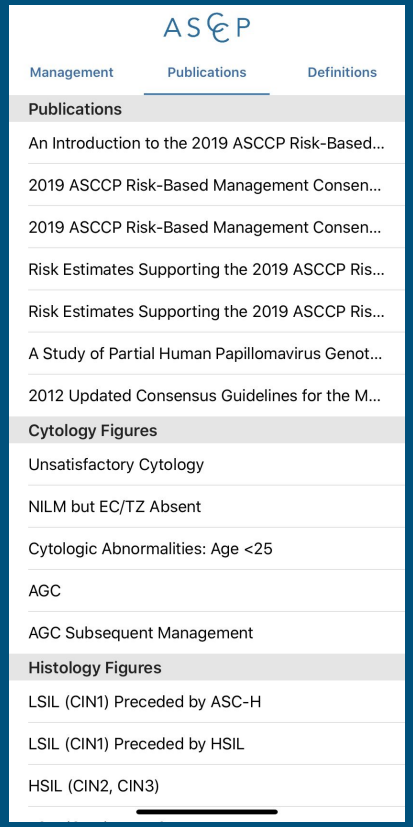
2012 ASCCP Guidelines[6]

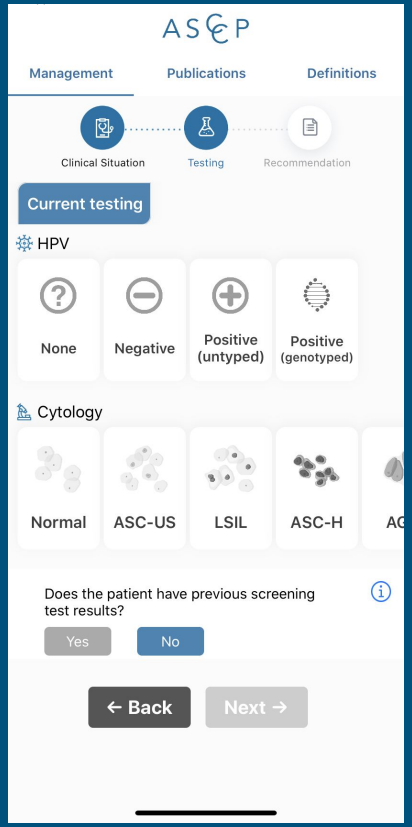
Continued surveillance with HPV testing or co-testing at 3 year intervals for at least 25 years is recommended after treatment and initial post-treatment management of histologic HSIL, CIN2, CIN3 or AIS.

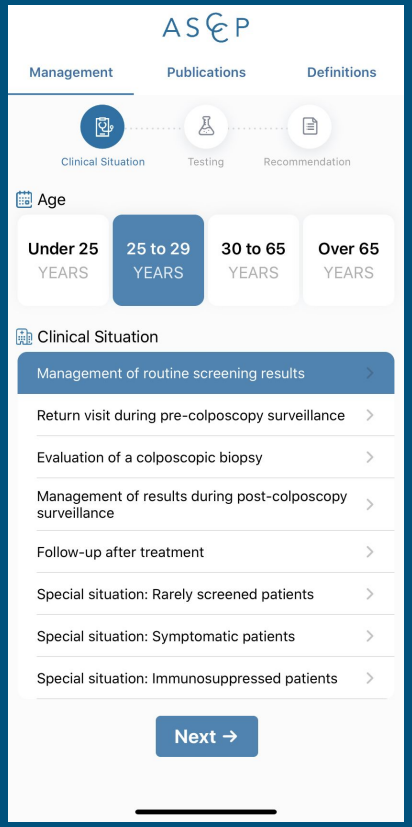
2019 ASCCP Guidelines[7]

There's an app for that!





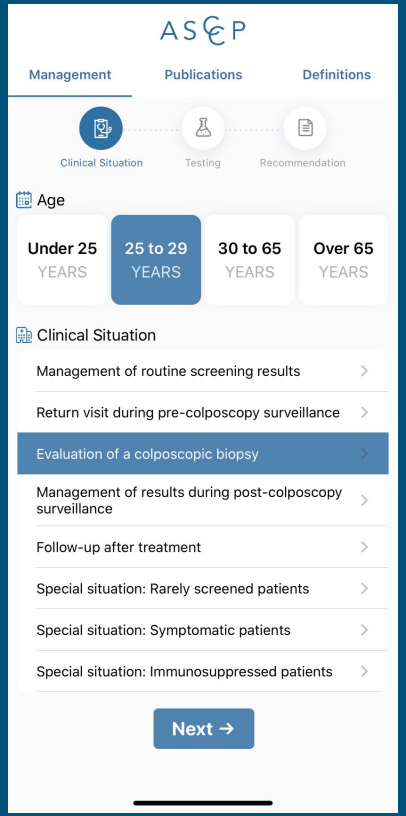


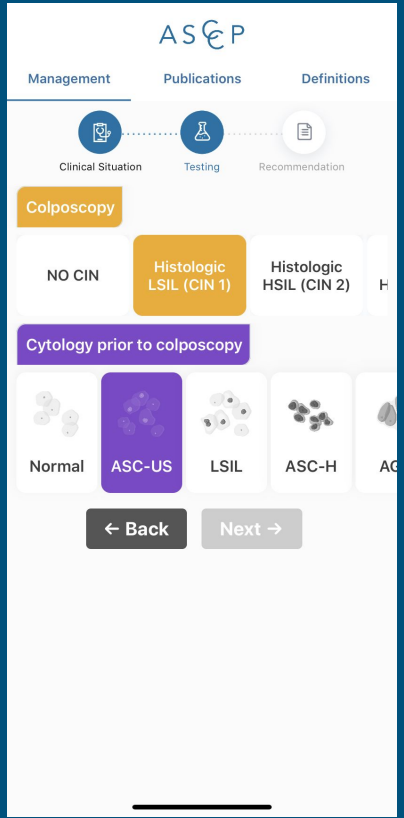


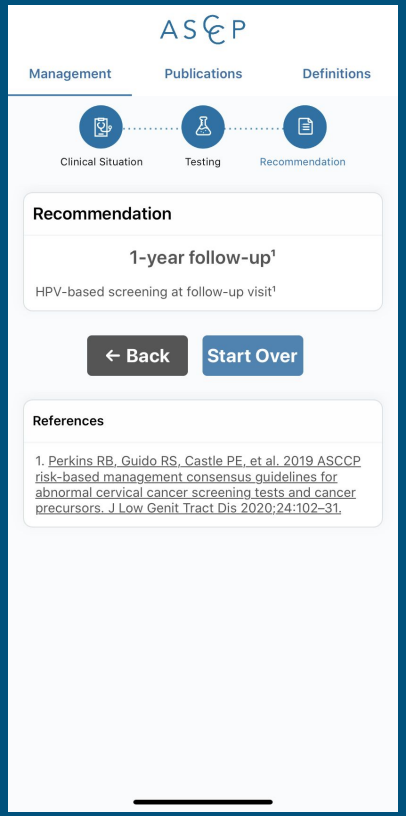
Case #3

A 28y/o F presents to your office to review the results of her colposcopy. She had a prior pap smear with ASCUS, with reflex +HPV. Biopsies from her colposcopy show CIN1. How do you counsel her?

ASCCP Management Guidelines App







ASCCP Management Guidelines

History	Current HPV result	Current cytology result	*n*	%	CIN 3+ cases	CIN 3+ immediate risk, %	CIN 3+ 5-year risk, %	Recommended Management	Recommendation confidence score, %
Unknown	HPV-negative	NILM	1,388,153	90	1,246	0.00	**0.12**	5-y follow-up	100
Unknown	HPV-negative	ASC-US	25,331	1.6	83	0.04	**0.40**	3-y follow-up	100
Unknown	HPV-negative	LSIL	3,300	0.21	47	1.1	**2.0**	1-y follow-up	100
Unknown	HPV-negative	ASC-H	791	0.05	26	3.4	3.8	Colposcopy[a]	Special situation
Unknown	HPV-negative	AGC	2,275	0.15	27	1.1	1.5	Colposcopy[a]	Special situation
Unknown	HPV-negative	HSIL+	183	0.01	43	**25**	27	Colposcopy/treatment	53
Unknown	HPV-negative	ALL[b]	1,420,033	92	1,472	0.01	**0.14**	5-y follow-up	95
Unknown	HPV-positive	NILM	63,541	4.1	1,798	**2.1**	**4.8**	1-y follow-up	100
Unknown	HPV-positive	ASC-US	30,506	2.0	1,378	**4.4**	7.3	Colposcopy	100
Unknown	HPV-positive	LSIL	23,659	1.5	1,008	**4.3**	6.9	Colposcopy	96
Unknown	HPV-positive	ASC-H	3,766	0.24	863	**26**	33	Colposcopy/treatment	82
Unknown	HPV-positive	AGC	977	0.06	254	26	35	Colposcopy/treatment[a]	80
Unknown	HPV-positive	HSIL+	3,980	0.26	1,700	**49**	53	Colposcopy/treatment	100
Unknown	HPV-positive	ALL[b]	126,429	8	7,001				
		Total[c]	1,546,462	100	8,473				

History: Precolposcopy test result	Colposcopic biopsy diagnosis	*n*	%	CIN 3+ cases	CIN 3+ 1-y risk, %	CIN 3+ 5-y risk, %	Recommended management
HPV-positive NILM ×2	<CIN 1	7,082	6.9	120	0.56	**2.7**	1-y follow-up
HPV-positive ASC-US	<CIN 1	15,601	15	251	0.49	**3.2**	1-y follow-up
HPV-positive LSIL	<CIN 1	7,129	6.9	94	0.59	**2.1**	1-y follow-up[a] (special situation)
ASC-H	<CIN 1	1,644	1.6	51	**2.4**	**4.4**	1-y follow-up[a] (special situation)
AGC	<CIN 1	3,213	3.1	55	1.2	**1.6**	1-y follow-up[a] (special situation)
HSIL+	<CIN 1	338	0.33	16	**2.9**	**4.8**	1-y follow-up[a] (special situation)
HPV-positive NILM ×2	CIN 1	5,732	5.6	102	0.74	**2.8**	1-y follow-up
HPV-positive ASC-US	CIN 1	20,131	20	296	0.53	**2.6**	1-y follow-up
HPV-positive LSIL	CIN 1	18,254	18	242	0.74	**2.3**	1-y follow-up
ASC-H	CIN 1	2,131	2.1	70	**1.4**	**5.6**	1-y follow-up[a] (special situation)
AGC	CIN 1	947	0.92	22	1.3	**3.8**	1-y follow-up[a] (special situation)
HSIL+	CIN 1	809	0.78	33	**3.9**	**6.5**	1-y follow-up[a] (special situation)
—	CIN 2	12,094	12		NA	NA	Treatment
—	CIN 3	6,836	6.6		NA	NA	Treatment
—	AIS	531	0.51		NA	NA	Treatment
—	Cancer	656	0.64		NA	NA	Treatment
	Total	103,128	100	1,352			

Recommendations for practice

- It can be challenging for those of us in primary care to keep up with relatively frequent changes to management guidelines, hence the significance of having up to date technology at our fingertips. The use of apps can aid PCPs in providing appropriate patient care.
- EMR systems should contain a user-friendly interface for tracking cervical cancer screening results and ensuring appropriate follow up.

Take home points - Top 3

1. Recommendations for further management should now be based on patient risk, not just test results.
2. Primary HPV screening will likely be an important component of cervical cancer screening in the future.
3. Technology is your friend in keeping up to date with changing guidelines.

References

1.Egemen D, Cheung LC, Chen X, Demarco M, Perkins RB, Kinney W, et al. Risk Estimates Supporting the 2019 ASCCP Risk-Based Management Consensus Guidelines. J Low Genit Tract Dis. 2020 Apr;24(2):132–43.

2. USCS Data Visualizations - CDC [Internet]. [cited 2020 Oct 21]. Available from: https://gis.cdc.gov/Cancer/USCS/DataViz.html

3. Wardak S. Human Papillomavirus (HPV) and cervical cancer. Med Dosw Mikrobiol. 2016;68(1):73–84.

4. Markowitz LE, Dunne EF, Saraiya M, Lawson HW, Chesson H, Unger ER, et al. Quadrivalent human papillomavirus vaccine: recommendations of the advisory committee on immunization practices (ACIP). MMWR Recomm Rep. 2007 Mar 23;56(RR-2):1–24.

5. Lei J, Ploner A, Elfström KM, Wang J, Roth A, Fang F, et al. HPV vaccination and the risk of invasive cervical cancer. N Engl J Med. 2020 Oct 1;383(14):1340–8.

6. Massad LS, Einstein MH, Huh WK, Katki HA, Kinney WK, Schiffman M, et al. 2012 updated consensus guidelines for the management of abnormal cervical cancer screening tests and cancer precursors. J Low Genit Tract Dis. 2013 Apr;17(5 Suppl 1):S1–27.

7. Perkins RB, Guido RS, Castle PE, Chelmow D, Einstein MH, Garcia F, et al. 2019 ASCCP Risk-Based Management Consensus Guidelines for Abnormal Cervical Cancer Screening Tests and Cancer Precursors. J Low Genit Tract Dis. 2020;24(2):102–31.

References

8. Huh WK, Ault KA, Chelmow D, Davey DD, Goulart RA, Garcia FA, et al. Use of primary high-risk human papillomavirus testing for cervical cancer screening: interim clinical guidance. J Low Genit Tract Dis. 2015 Apr;19(2):91–6.

9. Fontham ETH, Wolf AMD, Church TR, Etzioni R, Flowers CR, Herzig A, et al. Cervical cancer screening for individuals at average risk: 2020 guideline update from the American Cancer Society. CA Cancer J Clin. 2020 Jul 30;