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Lisa R. Boeger

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FEMALE CONDOMS AS A MEANS TO REDUCE THE TRANSMISSION OF HIV
AMONG MAASAI WOMEN

by

Lisa R. Boeger

Associate of Science in Nursing, Hibbing Community College, 2003

An Independent Study

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Science

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PERMISSION

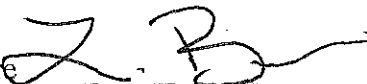
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Department Nursing

Degree Master of Science

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16 January 2013

Cover Letter:

The following article has been prepared for the *African Journal of Primary Health Care & Family Medicine*

Article Title: Female Condoms to Reduce HIV Among Maasai Women

Significance of Work: AIDS is a major threat to the health and well-being of the Maasai. Female condoms are the only female-initiated means of preventing sexually transmitted infections such as HIV, and pregnancy. Empowering women with an option of self-protection increases their negotiation power in the debate over condom use, thus increasing the use of both female and male condoms, leading to the ultimate positive effect of increased *protected sex*.

Full Author Details:

Lisa Rachel Boeger, Family Nurse Practitioner Student, RN
University of North Dakota
PSC 809 Box 2458 APO, AE 09626
Email: lisa.boeger@my.und.edu

Jody Ralph, PhD, RN
Assistant Professor
College of Nursing and Professional Disciplines
University of North Dakota
430 Oxford Street Stop 9025
Grand Forks, North Dakota, United States 58202
Email: Jody.Ralph@und.edu
Telephone: 1-701-777-5784

Author Contributions: Lisa Boeger: primary author, conducted an in-depth review of the literature. Jody Ralph: revised manuscript to enhance reader-friendly style and follow journal guidelines.

Possible reviewers:

Elizabeth Kostas-Polston, PhD, APRN, WHNP-BC

Assistant Professor

University of South Florida College of Nursing

epolston@health.usf.edu

Summary: Article is 4,408 words, 23 pages, and contains three tables.

1 **Abstract**

2 **Background:** HIV/AIDS continues to present a serious threat to the health of Maasai
3 women. Many confounding factors including: the subservient status of women, practice
4 of polygamy, and wife-lending place Maasai women at high risk for AIDS. Female
5 condoms are the only female-initiated measure for preventing sexually transmitted
6 infections, offering negotiating power in the debate over condom use.

7 **Objectives:** The scope of this article is to examine the efficacy and practicality of female
8 condoms as a barrier method for HIV prevention among Maasai women.

9 **Method:** The following electronic reference databases were searched using both text
10 words and subject headings: CINAHL, Cochrane Library, PubMed, TRIP, U.S.
11 Preventative Services Task Force, National Guideline Clearinghouse and Europa World
12 Plus. Search terms included: female condom, female and male condom, female barrier,
13 and Maasai.

14 **Results:** A review of the literature indicates that female condoms are cost effective, an
15 effective barrier method for both contraception and STI protection, and generally
16 accepted. Current barriers that have prevented the uptake of the female condom use
17 include: a lack of systematic introduction, a lack of knowledge in the general population
18 concerning female condoms, and cost. Further research on female condoms utilizing
19 standardized failure mode definitions and failure rates would be beneficial.

20 **Conclusion:** Female condoms are effective, and need to be introduced in conjunction
21 with education for maximal effectiveness. Women in subservient status would greatly
22 benefit from the systematic introduction of female condoms, in particular to decrease
23 the transmission of HIV among the Maasai.

24 **How to cite this article:** Boeger, L.R., Ralph, J. Female condoms to reduce the
25 transmission of HIV among Maasai Women. Afr J Prm Health Care & Fam Med.

27 **Introduction**

28 AIDS and the Maasai

29 In 2010 sub-Saharan Africa represented 70% of all people who acquired HIV
30 infections globally, but only accounts for only 12% of the world's population.¹
31 Surveillance among the Maasai is limited, making it difficult to establish the actual
32 prevalence of the disease, though its known to be extremely common.² In areas where
33 testing centers are accessible, HIV rates were found to be as high as 21% in regions of
34 Tanzania where Maasai dwell.² HIV/AIDS is a major threat to the health and well-being
35 of the Maasai.

36 At least 90% of people infected with HIV/AIDS in Africa do not know they are
37 HIV positive, primarily because of the expense and scarcity of testing.³ The prevalence
38 of HIV among the Maasai has significantly impacted their mortality and quality of life,
39 making it a critical concern for healthcare professionals providing care to that
40 population.

41 Maasai Women are at High Risk for STIs

42 Several independent factors exist that contribute to young Maasai women being
43 a high risk population in the AIDS epidemic.

44 **Young Women:** The predominant mode of transmission of HIV in Africa is
45 heterosexual intercourse.³ Women are particularly vulnerable to the AIDS epidemic in
46 sub-Saharan Africa. Women in sub-Saharan Africa aged 15-24 years are 3.4 times more
47 likely to become infected with HIV than young men.⁴ Two contributing factors for this
48 increased risk seen among young women in sub-Saharan Africa include gender norms
49 and forced sex.⁵ Cultural gender norms encourage: males to have multiple, often much

50 younger sexual partners, limited education among females, and limited access to
51 healthcare.^{5,6}

52 Biological, sociocultural, economic, and political factors are also seen as
53 contributing factors.⁶ According to Mavedzenge, Doyle, Phil, and Ross [7] there are
54 several considerations that contribute to the high risk status of adolescents living in sub-
55 Saharan Africa: "lack of knowledge, poorly developed life skills, lack of parental
56 mentoring, lack of financial autonomy, early sexual debut, sexual coercion, and limited
57 access to health facilities" (p. 568).

58 **Maasai:** Maasai are in a particularly high-risk group. The Maasai are fully
59 nomadic pastoralists who reside in Kenya and Tanzania.⁸ Because of their nomadic
60 lifestyle in extremely rural areas, the Maasai have limited and sporadic access to
61 healthcare and condoms, and knowledge about HIV/AIDS is low.⁹ An independent
62 individual risk factor for acquisition of HIV in a wide range of settings is migration.¹⁰
63 Most migrant Maasai who travel to urban areas for work are not having sex in town,
64 but HIV is seen as a town problem while rural areas are mistakenly seen as "clean" and
65 disease free.¹⁰

66 **Maasai Women Specifically:** Polygyny, wife-lending, and the tendency for girls
67 to lose their virginity before puberty all contribute to their high risk.⁸ As among the
68 Maasai, "the subordinate status of women in many countries makes negotiating male
69 condom use with partners especially difficult" (p. 2).¹¹ In sub-Saharan Africa, an
70 estimated 60-80% of HIV positive women contracted the virus from their husband.⁶
71 Some Maasai women lack control over their sexual decisions because of culturally
72 associated gender inequalities which make abstinence and male condom use difficult.⁶

73 Sexually transmitted infections (STIs) are a major cause of morbidity among the
74 Maasai, however there is little social stigma associated with them.⁹ A Maasai specific
75 study revealed that knowledge of HIV/AIDS was high; however, understanding
76 prevention methods was low, particularly condoms and their correct use.⁹ Another
77 confounding factor is the ambiguity of the language surrounding HIV/AIDS among the
78 Maasai. The ambiguity leads to the assumption by some Maasai that "HIV is no
79 different from other diseases that cause weight loss" (p. 1002).¹⁰

80 **Literature Review**

81 The following electronic reference databases were searched using both text
82 words and subject headings: CINAHL, Cochrane Library, PubMed, TRIP, U.S.
83 Preventative Services Task Force, National Guideline Clearinghouse and Europa World
84 Plus. Search terms included: female condom, female and male condom, female barrier,
85 and Maasai. Additionally, references from relevant studies were examined for
86 supplementary relevant citations.

87
88 The Strength of Recommendation Taxonomy (SORT) tool criteria were used to
89 grade levels of evidence for utilizing the study in practice and determining the strength
90 of a recommendation based on a body of evidence.¹² SORT utilizes an algorithm for
91 assessing levels of evidence that assigns a value to individual studies. This level of
92 evidence is reflected by the numeric score assigned.¹³ *Table 1* illustrates how
93 recommendations are graded for strength and *Table 2* illustrates how individual studies
94 are rated for quality.

95

96 *Table 1.* How recommendations are graded for strength using the Strength of
97 Recommendation Taxonomy Tool.

Strength of recommendation	Definition
A	Recommendation based on consistent and good-quality patient-oriented evidence.*
B	Recommendation based on inconsistent or limited-quality patient oriented evidence.*
C	Recommendation based on consensus, usual practice, opinion, disease-oriented evidence, or case series of diagnosis, treatment, prevention, or screening.*

98 * Patient-oriented evidence measures outcomes that matter to patients: morbidity,
 99 mortality, symptom improvement, cost reduction, and quality of life. Disease-oriented
 100 evidence measures intermediate, physiologic, or surrogate end points that may or may
 101 not reflect improvements in patient outcomes.(Adapted from Ebell et al, 2004).¹²
 102

103 *Table 2.* How recommendations are graded for strength.

Study Quality	Diagnosis	Treatment/prevention/screening	Prognosis
Level 1: Good quality patient-oriented evidence	Validated clinical decision rule	Systematic review (SR) /meta-analysis of RCTs with consistent findings	SR/meta-analysis of good-quality cohort studies
	SR/meta-analysis of high-quality studies	High-quality individual RCT	Prospective cohort study with good follow-up.
	High-quality diagnostic cohort study	All-or-none study	
Level 2: Limited-quality patient-oriented evidence	Unvalidated clinical decision rule	SR/Meta-analysis lower-quality clinical trials or of studies with inconsistent findings	SR/meta-analysis of lower-quality cohort studies or with inconsistent results
	SR/meta-analysis of lower-quality studies or	Lower-quality clinical trial or prospective cohort study	Retrospective cohort study with

	studies with inconsistent findings	Cohort study	poor follow-up
	Lower-quality diagnostic cohort study or diagnostic case-control study	Case-control study	Case-control study Case series
Level 3: Other evidence	Consensus guidelines, extrapolations from bench research, usual practice, opinion, other evidence disease-oriented evidence (intermediate or physiologic outcomes only), or case series for studies of diagnosis, treatment, prevention, or screening		

104 (Adapted from Ebell et al, 2004).¹²

105 How female condoms address the risk

106 Female condoms are defined by the World Health Organization (WHO) as

107 A device that is designed to be used by the woman to prevent pregnancy and/or
 108 sexually transmitted infections during vaginal intercourse. It is distinguished
 109 from a male condom by being retained in the vagina after insertion. The external
 110 component of the device usually provides some protection to the external female
 111 genitalia. (p. 4)¹⁴

112 Female condoms are the only female-initiated means of preventing pregnancy
 113 and STIs such as HIV.¹⁵⁻¹⁷ Female condoms offer several advantages over male condoms.
 114 The most significant advantage is empowering women with an option of self-protection
 115 increases the negotiation power of women in the debate over condom use, thus
 116 increasing the use of both female and male condoms with the positive effect of
 117 increased *protected sex*.^{18, 19} This accomplishes the ultimate goal of decreased
 118 transmission of HIV. It offers women the right to protect themselves from STIs instead

119 of merely relying on males to initiate protective measures. This especially benefits
120 women in subservient statuses, as seen among the Maasai. The first generation of
121 female condoms are made of polyurethane plastic which is stronger than the latex used
122 in male condoms and isn't weakened by oil-based lubricants.²⁰ The second generation of
123 the female condom is made of nitrile and contains no seams and is produced at a lower
124 cost.²¹ Nitrile is similar to the material used in synthetic latex surgical gloves used for
125 people who have latex allergies.²¹ Furthermore, total clinical failures decreased among
126 the second generation of female condoms.¹⁷

127 The female condom offers several advantages over the male condom. They can
128 be inserted up to eight hours before sexual contact occurs.²² They are designed for single
129 use only, as with male condom.^{20,22} The female condom doesn't require an erect penis
130 and can increase the spontaneity of sex. The design of female condoms offers more
131 physical coverage to both the female and male partners.^{11, 14} No serious local side effects
132 or allergies have been reported from use of the female condom.^{11,20} The female condom
133 has been shown to not: alter the vaginal flora, cause significant skin irritation, or result
134 in allergic reactions or vaginal trauma.^{22,23} In a study using the presence of Prostate
135 Specific Antigen in vaginal fluid as a measure for exposure to semen, male and female
136 condoms were found to be equally effective barriers.²⁴ Female condoms are generally
137 accepted by male partners, some citing the novelty factor as a motivation for their
138 use.^{22,25}

139 Though some feel female condoms are ineffective, male and female condoms
140 have been found to be almost equally effective barriers to semen exposure.^{4,24,26} The
141 female condom covers internal and part of the external female genitalia which may
142 provide additional protect against STIs spread by skin or mucosal surface contact such
143 as herpes, syphilis, chancroid, and HPV.^{6,20,27}

144 Drawbacks of female condoms

145 While there are many advantages to the female condom there are also
146 limitations. They are more expensive than male condoms, female condom failure and
147 mechanical problems can result from their improper use, and women report being
148 hesitant to using them. Complaints concerning the female condom include: feeling the
149 outer and inner ring of the female condom and discomfort during sex which may be
150 overcome with practice on use.²⁷ After use, 59.5% of participants reported that female
151 condoms were acceptable and 65.3% of participants reported that they would
152 recommend the female condom to others.²⁷ Discomfort with insertion and use of the
153 female condom decreased with increased experience with the female condom.¹⁷ The
154 noise associated with the use of first generation female condoms has been reduced with
155 the second generation because of the different material used.⁶

156 Education has proven to diminish the limitations of improper use and hesitancy
157 in utilizing the device. Studies find that with education sessions, an improvement in the
158 acceptability and proper use of female condoms increased.^{15, 18}

159 Female condoms are more expensive than male condoms. The Joint United
160 Nations Programme on HIV/AIDS negotiated a public sector price of \$0.58 USD per
161 condom for the first generation of female condoms.²⁰ Male condoms cost \$0.03 USD per
162 unit.²⁰ The price difference has decreased with the production of the second generation
163 of female condoms. Holtgrave et al [28] found that the second generation female
164 condom has retained its effectiveness but is much lower in cost. With the production of
165 the second generation of female condoms, cost decreased to \$0.22 USD per unit when
166 purchased in bulk, reducing the price gap between male and female condoms.²¹

167 Several factors have been implicated for the poor uptake of female condoms: lack
 168 of systematic introduction, lack of support from policy makers, less information on the
 169 product and high production costs.^{6, 28, 29} Two themes emerge as critical barriers:
 170 availability and awareness. Information and knowledge concerning female condoms
 171 among the general population is limited.^{25, 28} This leads to misinformation concerning
 172 the female condom. Gynecologic healthcare products for women have historically taken
 173 time to gain popularity. For example, almost three decades passed between the first
 174 major marketing campaign and widespread use of the tampon.⁶

175 Efficacy

176 The WHO has recognized the lack international standardization for studying the
 177 effectiveness and safety of the female condom. A technical review committee convened
 178 to address this issue and compile definitions of failure modes associated with the
 179 female condom as outlined in *Table 3*.³⁰

180 *Table 3. Failure Modes of Female Condoms Defined by the World Health Organization.*

Failure Modes	Definition
Slippage	A female condom that slips completely out of the vagina during intercourse.
Misdirection	Vaginal penetration whereby the penis is inserted between the female condom and vaginal wall.
Invagination	Part or the entire external component of the female condom being pushed into the vagina during intercourse.
Total Breakage	Female condom breakage at any time before, during or after intercourse. Includes both clinical and non-clinical breakage.

Non-Clinical Breakage	Breakage without adverse clinical consequences: breakage noticed before intercourse or occurring after withdrawal of the condom from the vagina.
Clinical Breakage	Breakage with potential adverse clinical consequences: breakage during intercourse or withdrawal of the female condom from the vagina.
Total Clinical Failure	The number of female condoms that clinically break or slip, or are associated with misdirection or invagination, during intercourse or any additional failure mode(s) identified in the risk assessment.
A Condom Failure	A condom for which a non-clinical breakage, a clinical breakage or a slippage occurs, or is associated with misdirection or invagination or any additional failure mode(s) identified in the risk assessment.

181 (Adapted from World Health Organization, 2007).³⁰

182 There is no international standard for testing female condoms. Two methods
 183 currently exist for study: patients reporting failure modes of the female condom and the
 184 use of Prostate Specific Antigen (PSA) in vaginal fluid. PSA in vaginal fluid is a method
 185 for testing whether semen exposure has occurred and has been used to assess male
 186 condom effectiveness.²⁴ Macaluso et al [24] found 14% of male condom uses and 17% of
 187 female condom uses were positive for PSA, indicating that semen exposure had
 188 occurred. Macaluso et al [24] indicated that self-reported problems associated with the
 189 female condom included: breakage, misrouting, invagination, slippage and "other
 190 mechanical problems" (p. 90). The study found that breakage among female condoms is
 191 rare, but mechanical problems are more common than among male condoms. Incorrect
 192 use of the female condom was common in the study, including not holding the rim
 193 while removing the penis from the vagina, which could be mitigated with education.²⁴
 194 Macaluso et al [24] found male and female condoms to be similarly effective in

195 preventing semen exposure. Semen exposure decreased as experience increased with
196 the use of female condoms.^{6, 24}

197 The WHO standard for male condoms is breakage rates less than 5%.¹⁷ Breakage
198 rates for male condoms range from 2.4 - 6%.¹⁷ Breakage rates in Bekisinska et al's study
199 [17] for the first generation of female condoms was 0.7% and 0.9% for the second
200 generation of female condoms, which are both lower than breakage rates for male
201 condoms. Fewer women using the second generation of female condoms reported that
202 it was uncomfortable to use when compared to the first generation.¹⁷ Additionally, total
203 clinical failures decreased from 5.2% with the first generation of female condoms to
204 4.3% among the second generation of female condoms.¹⁷ Failure modes between the
205 first and second generation of female condoms are functionally equivalent when used
206 effectively.^{17,30}

207 Invagination was found to be the most common type of female condom failure
208 by Beksinska et al [31] and generally occurs during first female condom use. With
209 education and experience, invagination of the condom significantly decreases.
210 Breakage, slippage, misdirection, spilling of ejaculate after removal, and pulling out of
211 the vagina, thus acting like a male condom are other failures of the female condom
212 studied by Beksinska et al.³¹ Each of these types of failures decreased significantly with
213 experience (after 3 uses) and education.³¹ Practice on a pelvic model and insertion with
214 feedback from a nurse decreased insertion difficulty from 25% to 3%.²⁹ Mantell et al [29]
215 also found that breakage and slippage rates fell from 20% to 1.2% from the first to
216 fifteenth use. In another study that assessed trichomoniasis re-infection among women
217 who used female condoms and found no participants had been reinfected after 45
218 days.¹⁹ A controlled study in Thailand showed that when both male and female

219 condoms were available, the rate of STI transmission was reduced by one-third when
220 compared to the rate of a similar group that solely had access to male condoms.²²

221 A study in Zambia found couples reporting unprotected sex decreased from 42
222 to 10% after the introduction of the female condom.⁴ In the US an increase from 38-76%
223 of protected sex acts was reported with the introduction of female.⁴ Studies in both the
224 US and Thailand found a higher proportion of protected sex acts and a decrease of STI
225 incidents were found in the study arms that included female condoms.⁴

226 Results from in vitro testing conducted before FDA approval of the female
227 condom showed the female condom to be impermeable to both the cytomegalovirus
228 and HIV.¹⁵ A study by French et al [15] suggested that participants in the female
229 condom arm of the study were better protected from STIs than the male condom arm.
230 Beksinska et al [31] recommends that education and follow-up counseling after five
231 uses of the female condom drastically decreases improper use and acceptability of the
232 condom.

233 How female condoms increase negotiating power

234 The female condom offers a key advantage over the male condom: it can be used
235 at the initiative of the woman, giving women the ability to take control of their health.¹⁵
236 It is critical for a woman to have a method to protect herself from STIs and pregnancy.
237 Female condoms are entirely under the control of a woman, and eliminate the need for
238 protection negotiation in consensual intercourse. They also increase the negotiating
239 power of women who have access to them, increasing the likelihood of protected sex,
240 whether it is with a male or female condom. Provision of and access to the female
241 condom decreases the number of unprotected sex acts in the population.⁴

242 Measures of effectiveness

243 In Washington D.C.'s female condom program, an economic evaluation was
244 conducted. The evaluation indicated that "the provision and promotion of female
245 condoms in Washington DC is a highly productive use of public health investment" (p.
246 1119).²⁸ From an economic standpoint, female condoms have been shown to be cost-
247 effective by decreasing STI transmission, including HIV.²⁸

248 The female condom is more expensive than the male condom, but can be cost-
249 effective because of its ability to increase the number of protected sexual acts.²² The
250 female condom becomes more cost effective and even cost-saving as the level of risk for
251 STIs/HIV increases among users and their partners.²² The female condom also expands
252 barrier protection and contraception options. A systematic review showed that female
253 condoms could prove to be cost-effective in rural South Africa but requires that they be
254 promoted well and targeted effectively.⁴

255 Programs

256 Many programs exist that aim to prevent the spread of HIV, however prevalence
257 remains high. "Most HIV/AIDS prevention programs in Africa have largely failed
258 because the research behind them is focused primarily on risk groups, behavioral
259 change models, and flawed understandings of cultural practices and economic
260 conditions" (p. 585).³² A systematic review found strong evidence supporting HIV
261 prevention strategies including: providing information, HIV testing and counseling,
262 and providing and teaching on use of condoms.⁷ Furthermore, "Community
263 involvement and engagement has great potential for improving health, including
264 changing established norms, values, and traditions that may impede HIV prevention
265 and care, increasing the support young people need, and improving access to necessary
266 information and services" (p. 575).⁷

267 In 2004, the Kenyan government followed the example of several countries and
268 agreed to support the distribution of female condoms along with male condoms. After
269 education on and access to free female condoms in voluntary counseling and testing
270 services centers in Kenya, a steady increase in uptake was noted.²⁵ In the Kenyan clinics
271 that participated in education on female condoms, males as well as females reacted
272 enthusiastically.²⁵

273 Discussion

274 Female condoms and education can greatly reduce the incidence and prevalence
275 of HIV in the Maasai's patriarchal society. The male condom has, and will probably
276 continue to be the key contraceptive and barrier method utilized.²⁴ Female condoms
277 offer an additional choice in preventative health. They are effective because of their
278 ability to increase the negotiating power of women in the debate over protected sex,
279 thus increasing the overall likelihood of protected sex. The female condom offers a key
280 advantage over the male condom: it can be used at the initiative of the woman, giving
281 women increased ability to take control of their health.¹⁵

282 Many studies involving the comparison of male and female condoms may be
283 inherently biased as male condoms are used much more often and they are more
284 familiar to the general population.^{4, 6, 24} Even with this bias, studies continue to show the
285 effectiveness of the female condom as an effective barrier method for both pregnancy
286 and STIs. When experience with the female condom is gained, failure modes decrease
287 and acceptability increases.²⁴

288 Practical Implications

289 The WHO [22] outlines a planning process for introducing the female condom: 1)
290 Develop a national team to co-ordinate activities, 2) Organize a stakeholders' meeting to
291 put the female condom on the public health agenda and gain a mandate for developing
292 a strategic plan, assess user needs and service capabilities and currently available
293 methods and services. 3) Outline the context for the introduction of the female condom.
294 4) Draft a strategic document. Use the document to gain consensus from all
295 stakeholders. 5) Implement pilot intervention with monitoring and evaluation. 6)
296 Feedback, revision and going to scale. This offers a structured, organized approach to
297 the female condom's introduction amongst Maasai females.

298 An HIV prevention program directed at female Maasai should include:
299 educational sessions concerning the correct use of the female condom incorporating
300 female pelvic anatomy models, motivational interviewing, and supply of female
301 condoms to Maasai women during sexually active years. Education increases the female
302 condom acceptability and its use.^{18, 29} Mash, Mash and de Villers [33] suggested
303 incorporating motivational interviewing into the educational sessions would be
304 beneficial. Implementation would occur in several phases. Pre-change activities include:
305 securing an adequate supply of female condoms and training pelvic models, training
306 local health care providers on proper use and instruction, arrangements for an
307 appropriate area to conduct the educational sessions, the use of word of mouth to
308 advertise, and the transportation of female condoms and pelvic models to remote areas.

309 Implementation would require that the health care providers be proficient in
310 Maasai language and culture. The Rapid Assessment Response and Evaluation (RARE)
311 model was adapted by Birks et al [32] utilizing community engagement to examine the
312 impact of HIV/AIDS among the Maasai at Ngorongoro. Their findings echoed Coast's
313 study [10] identifying cultural awareness and consideration of cultural practices are

314 imperative for a successful HIV prevention program. As the WHO [22] suggests, some
315 populations may benefit by introducing and promoting the female condom as a
316 contraceptive method. It is important to incorporate local understanding and culturally
317 appropriate HIV interventions for a program to be successful.¹⁰

318 Education on both HIV and the use of female condoms is important. "Correct
319 knowledge about HIV is strongly associated with reported behavior change" (p. 1005).¹⁰
320 Coast [9,10] has shown that language surrounding HIV/AIDs is ambiguous and
321 knowledge about the disease process is limited. With implementation of these practice
322 recommendations, women in this high risk population are enabled to practice
323 preventive care and protect their health and well-being.

324 **Limitations**

325 More research is needed using the standardized definitions of failure modes
326 outlined by the WHO and comparing the effectiveness of the female condom to the
327 male condom. Established guidelines and standards for testing and evaluation of
328 female condoms are also necessary to fully test their efficacy in a standardized way.^{17, 30}
329 Surveillance data in rural areas of sub-Saharan Africa is limited. It is difficult to
330 measuring the impact of an intervention in sub-Saharan Africa because accurate
331 epidemiological data is currently lacking.

332 **Recommendations**

333 The SORT tool will be used as a basis for assigning the strength of each
334 recommendation.

- 335 1. Implement two provider-led educational sessions concerning the correct use of
336 the female condom and general information on HIV including transmission

337 modes. These sessions will incorporate the use of a female pelvic anatomy cross-
338 section model and female condom model. (Level A).

339 There are both positive and possible negative implications associated with this
340 practice recommendation. Increasing awareness of an additional protective measure
341 from HIV/AIDS among providers and the target audience is crucial. Education has been
342 shown to decrease the failure rate of female condoms.^{17,18,31} This form of protection may
343 have ethical implications among some providers and participants depending on their
344 religious and cultural beliefs concerning contraception.

345 2. Supply female condoms to Maasai women during sexually active years. (Level
346 B).

347 The implication of this recommendation is an additional prevention strategy for
348 women to protect themselves. The mere act of having a female condom increases a
349 woman's negotiating power of protective methods with their partner.^{11, 15,19} HIV/AIDS
350 incidence can be decreased among the Maasai with the consistent and correct use of
351 female condoms.

352

353 **Conclusion**

354 The objective of this article was to examine the efficacy and practicality of female
355 condoms as a barrier method for HIV prevention among Maasai women. Available
356 research indicates female condoms are effective barrier methods, acceptable, and cost-
357 effective. Introduction of female condoms needs to be systematic and include education
358 for maximal effectiveness. Women in subservient status, such as Maasai women, could
359 greatly benefit from the introduction of female condoms in conjunction with HIV

360 education. Female condoms offer women the opportunity to take increased control of
361 their reproductive health. Further HIV surveillance in rural areas of sub-Saharan Africa
362 is needed to determine effectiveness of interventions introduced among this population.
363 Future research of female condoms should incorporate the standardized definitions of
364 failure modes as presented by the World Health Organization.

365

366

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Female Condoms Reduce HIV Maasai
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