Non-latex versus latex male condoms for contraception

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In the trials included in the review, compared with latex condoms, non-latex condoms were more likely to break or slip off during intercourse or withdrawal. However, substantial proportions of study participants reported a preference for non-latex condoms, suggesting that non-latex condoms could be an acceptable alternative for those with a higher need for sensitivity or those who have aversion to latex condoms.

RHL Commentary by Festin MR

1. INTRODUCTION

Condoms are among the more widely available methods of contraception, and have the added advantage of providing protection against sexually transmitted infections (STIs), including HIV. The condom is a safe, effective, user-controlled method of contraception which is cheap and easy to use. The material from which condoms are made have evolved from “natural membrane” or “lambskin” to the presently widely available latex variety. Users of latex condoms especially have reported several disadvantages with the method, such decreased sensitivity and enjoyment during the sexual act, difficulties with donning and removing, the need to use a fresh piece for every act of coitus, and allergy to latex. Latex condoms may also be subject to deterioration during storage (1) and as a result of exposure to lubricants, which are often included in the packaging. These have led to the development of new condoms made of non-latex materials, such as polyurethane film or synthetic elastomers (2). The perceived advantages of non-latex condoms include compatibility with oil-based lubricants, better storage life, less noticeable odour, less constricting fit and greater body heat conductivity (2). It has been postulated that these properties may increase the acceptability and use of condoms as a contraceptive method. The objective of the Cochrane review (3) was to compare the contraceptive efficacy, breakage, slippage, safety and user preferences of non-latex male condom versus the latex variety.

2. METHODS OF THE REVIEW

The review authors’ search strategy followed the usual Cochrane sources. The authors sought publications based on randomized controlled trials comparing non-latex (but not made of natural membrane) male condoms with latex condoms in terms of contraceptive efficacy, breakage and slippage, safety and user preferences. The non-latex condoms included for the review were the eZon, Avanti, Tactylon, and Protex Original. Evaluation of the articles involved independently extracted data by two authors. The Peto odds ratio (OR) with 95% confidence interval (CI) was calculated for each outcome mentioned above. Contraceptive efficacy, condom breakage and slippage, discontinuation, and user preference were the outcomes measured performed using survival analysis methods.
3. RESULTS OF THE REVIEW

Eight randomized crossover studies and three randomized parallel studies met the criteria for inclusion. The 11 eligible trials had recruited sexually active adult couples in a monogamous, heterosexual relationship and who were not at risk for STIs. Nine trials were done in the USA, one in the UK and one in France. Events were measured using the measures proposed by Streiner. Breakage included nonclinical (during package opening or while being put on) and clinical (during intercourse or withdrawal) divided by the number of condoms attempted to be used. Slippage rates were calculated as total number of partial or complete slipping off of the condom divided by the total number of condoms used during intercourse. Breakage and complete slippage rates were used to calculate the rate of total failure.

The non-latex condoms had higher rates of clinical breakage compared with latex condoms: the Peto OR for clinical breakage ranged from 2.64 (95% CI 1.63–4.28) to 4.95 (95% CI 3.63–6.75). For five comparisons, the Peto OR of total failure for the non-latex condom versus the latex variety ranged from 1.92 (95% CI 1.08–3.40) to 3.47 (95% CI 2.82–3.40), but the other six comparisons did not have statistically different Peto ORs. Clinical breakage, rather than nonclinical breakage or slippage, was responsible for the higher rates of condom failures with the non-latex condoms.

Discontinuation rates for the non-latex condoms varied widely in the trials. Couples using the Avanti non-latex condom were more likely to discontinue early in the trial compared with those using latex condoms (4). The Avanti condom users were also significantly more likely to discontinue for reasons related to condom properties than those using latex condoms. The discontinuation rates for Tactylon compared with latex condoms were not significantly different, and for eZ.on compared with latex condom also showed similar rates of discontinuation.

4. DISCUSSION

The present review suggests that the non-latex condoms in general do not perform as well as the latex condoms. In general, the non-latex condoms were more likely to break during intercourse or withdrawal than were latex condoms. The odds for breakage or slippage were about double compared with those for latex condoms. Some non-latex products, such as the eZ.on condom, did not protect against pregnancy as well as its latex comparison condom. However, no differences were found in typical-use efficacy between the Avanti and the Standard Tactylon and the latex comparison condoms. It should be noted (as it has been noted in the review) that breakage and slippage have not been established to be valid surrogate endpoints for contraceptive efficacy. Hence it has been suggested that these outcomes should not be used in future studies (5) to determine condom efficacy.

In terms of user preferences, substantial proportions of study participants reported a preference for non-latex condoms. Thus, the non-latex condoms appear to be an acceptable alternative for those with a higher need for sensitivity or those with aversion to latex condoms. The review authors note that being accustomed to using latex condoms may create a certain level of bias in terms of experience and familiarity with use (donning, fitting, using) compared to non-latex condom. This may be valid if the ease of putting on the non-latex condom would be much different from that of the latex type.

4.1 Applicability of the results

The effectiveness of condoms is highly dependent on correct use, which is determined by ease of use, absence of adverse events during and after use, and freedom from worries of signs of failure. The increased odds of breakage and slippage of non-latex condoms could be a cause for concern among condom users, as these would most likely affect the outcomes on pregnancy and STIs/HIV rates (even if studies have not yet proven the association). Even though the studies include in this review were done exclusively in high-
income countries, the findings of the review are likely to be valid for all settings.

### 4.2 Implementation of the intervention

Overall, non-latex condoms were not found to have the same effectiveness as the latex condom in preventing pregnancy (especially eZ.on). However, condoms remain an excellent method of preventing pregnancy and STIs in all settings. The greater choice provided by the availability of non-latex condoms could be used to expand condom use among those who have difficulties with using the latex variety.

### 4.3 Implications for research

Since non-latex condoms could be appropriate for certain subgroups, efficacy studies of the condom types are warranted, such as among those with allergy to latex. Breakage and slippage as mentioned have not been found to be valid surrogate endpoints, so future studies should focus on pregnancy rates, although it may be difficult to follow up participants in such a study. The present studies have only looked at the use of non-latex condoms during vaginal intercourse to prevent pregnancy. Their value in protecting against STIs, including HIV, needs to be studied. The studies included in the present review only included couples who were in a monogamous heterosexual relationship and were at low-risk for STI acquisition; it would be interesting to study condom efficacy in other higher-risk population groups.

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### References