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“Bundling” HIV prevention: Integrating services to promote synergistic gain

Jeannette R. Ickovics*

Yale University School of Public Health, Connecticut, USA

Abstract

Background—Bundling is defined as the aggregation of services to increase effectiveness (i.e., creating synergy of effort). The purpose of this commentary is to review the utilization and potential benefits of bundling in its application to HIV prevention.

Methods—Review of the literature to provide a broad perspective on the concept of bundling and specific examples of bundling in HIV prevention. Benefits, challenges and directions are considered.

Results—To be effective, bundling must offer strategic advantage: greater value, less cost. It provides an opportunity to target multiple risk behaviors simultaneously for synergistic gain. Technological advances including rapid HIV tests permit noninvasive sampling in clinical and non-clinical settings. Bundling of HIV prevention provides an opportunity to reach high-risk persons who are asymptomatic and/or may not otherwise seek care by eliminating barriers to prevention.

Conclusions—We must implement programs that work and consider innovative approaches to stem the AIDS epidemic; bundling provides one such opportunity to create an efficient paradigm targeting multiple risk behaviors simultaneously.

Keywords

HIV/AIDS; Prevention; Bundling; Service provision; HIV testing

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Bundling is defined in the American Heritage Dictionary (4th Edition, 2004) as: (1) to tie, wrap, fold, or otherwise secure together; (2) to dispatch quickly and with little fuss; to hustle. With 14,000 HIV infections everyday globally, we must consider innovative approaches to prevention that enable us “to dispatch quickly and with little fuss.”

Bundling has a strong foundation in economics and marketing, where it is operationally defined as aggregation of goods or services to increase profitability. There are many industries that bundle (e.g., telecommunications, energy, insurance). For example, one can purchase bundled services for long-distance telephone, high-speed Internet, and satellite television, or bundled computer hardware (central processing unit, monitor, printer) and software (word processing, spreadsheets). Industries benefit by increased sales, coordination of activities, and reduced infrastructure costs (Simon and Wuebker, 1999). Consumers benefit by receiving integrated value-added services, one-stop shopping, and lower prices.

The purpose of this paper is to review the utilization and potential benefits of bundling in its application to HIV prevention. In this context, bundling is the aggregation of services to increase effectiveness of HIV prevention (i.e., creating synergy of effort). Bundling provides

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* Department of Epidemiology and Public Health, 60 College Street, Room 432, PO Box 208034, New Haven, Connecticut 06520–8034, USA. Fax: +1 203 785 6279. E-mail address: Jeannette.Ickovics@yale.edu..

an opportunity to reach high-risk persons who are asymptomatic and/or may not otherwise seek care by breaking down barriers to HIV prevention such as unwillingness to attend additional HIV prevention sessions and lack of time/resources to engage in prevention programs. Technological advances including rapid HIV tests and urine-based DNA amplification for sexually transmitted infections (STIs) permit noninvasive sampling (Bull et al., 2000). Therefore, HIV prevention services can be bundled in organizations with clinical capacity (e.g., emergency rooms, drug treatment, prisons, homeless shelters) as well as those without clinical capacity (e.g., faith-based organizations, beauty salons, bars, drug/sex trade areas, check disbursement sites, low income housing). As such, bundling can provide new opportunities for outreach, particularly among those at high risk or underestimated risk; therefore, it provides an opportunity to target multiple risk behaviors simultaneously for synergistic gain. Of course, many HIV prevention interventions have been conducted in these diverse clinical and non-clinical settings. A fundamental question is whether these are concatenated (i.e., “add on”) services, or whether they have the advantages of bundling — that is “value added.”

Bundling as synergy: offering “strategic advantage”

According to economists, bundling works best when: (1) goods/services are complementary; (2) there is a low marginal cost of added service; (3) consumers value all services; and (4) there is a low correlation in demand for different services (Bakos and Brynjolfsson, 1996). For example, my research team is conducting a randomized controlled trial testing the effect of bundling HIV/STI prevention with prenatal care. These services are complementary and there is a low marginal cost of bundling HIV prevention into prenatal care because existing clinic space and staff can provide knowledge and skills to promote all aspects of women's reproductive health (e.g., healthy pregnancy and HIV prevention). Indeed, we take advantage of the motivation for a healthy pregnancy to promote positive health behaviors (e.g., good nutrition, exercise, substance use cessation), and also prevent HIV risk wherein women might be exposed to infection that could harm her or her baby (Kershaw et al., 2003). Because all women want a healthy pregnancy, these services are valued, but there is a low correlation in demand — given that women are coming to health centers for prenatal care not HIV risk reduction. Bundling HIV prevention services into prenatal care makes conceptual sense because there is active coordination of multiple systems, services are synergistic, and we build on motivation for health in a cost-effective and sustainable way — at no added cost (Ickovics et al., 2007). This can be contrasted with a non-bundled intervention that has women come to separate sessions that solely target HIV prevention, but require independent/additional time and resources.

Nalebuff suggests that to achieve complementarity, the value of bundled services must exceed the value of the individual services ($\text{Value}(A+B) > \text{Value}(A) + \text{Value}(B)$), and that the costs of the bundled services must be less ($\text{Cost}(A+B) < \text{Cost}(A) + \text{Cost}(B)$) (Nalebuff, 2004). To benefit from bundling, we must integrate diverse services into sustainable approaches designed to promote the well-being of individuals, families and communities. We need to strengthen abilities to coordinate, link, and refer — which in healthcare is generally quite good. We also must respond to changing needs, providing a flexible well-defined system that offers strategic advantages. Salomon et al. (2005) estimated that bundling both HIV prevention- and treatment-centered interventions would result in a synergistic effect, significantly averting HIV infections by as much as 55% and HIV-related deaths by as much as 27% compared to either approach alone by the year 2020.

Bundling for health: applications to HIV prevention

Liaison mental health services

Perhaps the earliest (documented in 1751) and best established form of bundling is use of liaison mental health services: integrating mental health services into hospital and clinic settings where patients sought care for physical illness (Callaghan et al., 2003). Within psychiatric treatment, HIV prevention has also been bundled. Carey et al. (2004) randomly assigned patients seeking outpatient psychiatric care to one of three conditions: standard of care, substance use reduction, or bundled HIV prevention service. Six months post-intervention, those randomized to the bundled HIV prevention arm had improved HIV knowledge, condom attitudes, safer sex communication, behavioral skills, and intentions; they reported less unprotected sex and fewer casual sex partners, and were less likely to test positive for new STIs compared to the other two study conditions.

Testing for HIV and other sexually transmitted infections (STIs)

The most common service bundled in an attempt at HIV prevention is counseling and testing for HIV and other STIs. In a study of patients entering residential drug treatment, 97% of clients agreed to be tested for STIs; 19% had >1 STI, but there were high-risk subgroups identified as well, with STI rates as high as 43% (Bachmann et al., 2000). Working with the local health department, Bull et al. (2000) bundled STI testing using trained non-clinical providers (i.e., bartenders) into community-based organizations. In 1 year, they tested 849 adults with a prevalence rate of 9% for chlamydia and 3% for gonorrhea. They provided STI counseling, testing, treatment, partner notification, and follow-up. Advantages included availability, motivation for behavior change, reduced sexual risk, and sustainability. In Massachusetts, 10,352 patients were offered routine HIV testing in 2002 (10–15% per center); one-third of all primary care patients agreed to be tested (Walensky et al., 2002). There was a 2% seroprevalence rate; of these, 82% returned for results and all were linked to care. In California, bundling testing for HIV and hepatitis C for injection drug users resulted in a tripling of HIV testing rates compared to baseline rates: 8.4% to 27.1% (Heider et al., 2003). The EXPLORE Study Team found that among men who have sex with men randomized to ten individual HIV counseling sessions with quarterly maintenance, rate of HIV acquisition was 18% lower in the intervention compared to standard group, with the effect most favorable 12–18 months after the initial HIV test (Koblin et al., 2004).

Finally, HIV testing has been shown to be cost-effective. In a computer simulation model of HIV screening and treatment, Paltiel et al. (2005) found that HIV testing was associated with earlier HIV diagnosis, increased survival time, and averted transmission. The investigators concluded that screening one time or even every 3–5 years was justified on clinical and cost-effective grounds, with effects comparable to screening for other chronic conditions such as hypertension, diabetes, breast or colon cancer. Bundling may facilitate this effort.

Bundled “prevention for positives”

National strategies have recognized the importance of incorporating HIV prevention into medical care for persons with HIV (Institute of Medicine, Committee on HIV Prevention Strategies in the United States, Division of Health Promotion and Disease Prevention, 2001; Centers for Disease Control and Prevention, 2003). This provides an opportunity to target secondary prevention with advantages of repeated contacts over time, establishment of trusted relationships, and using health care providers as expert sources of health information. In a study of physician-delivered HIV prevention for positives in 4 US cities, 14% counseled established patients and 60% counseled newly diagnosed HIV patients (Metsch et al., 2004). Counseling was more likely if providers reported that there was sufficient time and had familiarity with treatment guidelines. Primary care physicians in family practice and internal medicine were

more likely to counsel compared to specialists in infectious diseases, and overall there was more counseling with women and those with no mental health or substance abuse problems. In the Options Project, Fisher et al. (2006) trained physicians to conduct motivational interviewing to assess patient's risk behavior and to negotiate behavior change goal/plan of action. They found that unprotected vaginal, anal and oral insertive sexual events declined for patients in the intervention condition while they increased for those in the traditional care condition over the course of the study.

Bundling: benefits, challenges, future directions

There may be numerous benefits to bundling. For institutions, there can be reduced infrastructure needs and costs, the opportunity to sell more services (or simply to give them away) creating a larger market for relatively low valued products (e.g., HIV testing in an environment where it is not the primary service sought), and creation of new collaborative partnerships. For individuals at risk for HIV, bundling can breakdown barriers to care and prevention. It can provide integrated, value-added services with familiar and/or trusted providers in a “known” place (i.e., one stop shopping). Sharing fixed costs (e.g., clinic and laboratory space, staff) may result in overall lower costs for both providers and consumers. As such, bundling may be especially useful in resource-poor environments both domestically and internationally.

Despite these potential benefits, there may also be numerous challenges to bundling HIV prevention. There is the risk of diffusion of quality, given lack of specificity. In our healthcare system, specialization is valued more than general expertise, and therefore services are “siloeed”. As such, health professionals often are not trained to deliver all services (e.g., primary care and counseling for HIV prevention). If individuals come to a site to obtain prenatal or dental care or to have their hair coiffed or simply to have an alcoholic beverage — they may not want to discuss HIV risk or prevention. Then, if they are dissatisfied with any service, they may leave the site, center, or program — becoming more resistant to prevention interventions in the future. Further, bundling HIV prevention must be both value added and cost-effective to obtain institutional support (Nalebuff, 2004). Finally, financing and economic incentives must be in place so that insurance or other revenue sources cover the costs of providing the bundled (i.e., supplemental) services. This is particularly important in resource-poor settings where adding services, diagnosing illness, and/or ensuring follow-up do add costs. Ideally, these would be billable services and/or offset by value-added outcomes such as enhanced quality of life or better health.

We must implement programs that work and consider new, innovative approaches to stem the AIDS epidemic. Stover et al. (2002) estimate that if existing HIV prevention strategies were “brought to scale,” we could prevent 29 million of 45 million projected infections by 2010. Only \$4.8 billion would be needed to fund 12 essential services worldwide (Schwartlander et al., 2001). Many of these “essential services” are described as bundled HIV prevention services: in schools, clinics, workplaces and churches. Despite documentation of successful prevention interventions, few are consistently implemented (Glasgow et al., 2003). Reasons cited are time and resources, insufficient training, lack of incentives for evidence-based practices, competing interests (e.g., political, religious, legal), and inadequate infrastructure to support translational research.

Future research must move from efficacy to effectiveness trials, and we must be responsible for translating effective programs into clinical practice. Uptake, fidelity and sustainability of bundled service models must be empirically assessed in order to minimize cost and maximize health benefits for individuals and institutions. The question regarding “what gets bundled” together and “how much” are other important considerations. One must consider whether there

is a threshold of services (i.e., is more always better or is there an ideal number of services to bundle). The empirical literature in HIV prevention has been limited to date (beyond HIV testing); therefore, until the empirical base is sufficient, pragmatic considerations must include prevalence (e.g., of co-morbid conditions), impact and severity, feasibility, availability of services, and cost. Often, cost is a huge barrier for access to and delivery of innovative services; therefore, future studies of bundled services must include measures of cost and cost effectiveness to provide a strong rationale to impact clinical care and service delivery.

Within HIV prevention, most interventions were developed with specificity to meet needs of targeted groups such as injection drug users, gay men, or inner city teens. But extensive tailoring may cease to make sense when there is an opportunity to share fixed costs and resources in a more generalizable way. This may be important for the most expensive costs such as staff, infrastructure (e.g., office space), and services (e.g., laboratory, counseling). Furthermore, if we can leverage resources from other organizations to maximize the benefits of HIV preventions targeting multiple risk behaviors simultaneously, we may create synergy and secondary gain. With 14,000 new HIV infections worldwide each day – 5 million annually – we must “dispatch quickly and with little fuss.” Bundling HIV prevention provides one such opportunity.

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