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Questions About Cutting Tablets to Cut Costs

By Rose-Ellen Hope, R.Ph., OSU College of Pharmacy and Ann Hamer, Pharm.D., OSU College of Pharmacy

The escalating cost of prescription medication is a recognized and growing burden.¹ Oregon Health Plan fee-for-service drug costs rose 36% from June 2004 to June 2005.² Dose optimization is one way to reduce prescription drug costs while maintaining quality health outcomes. Flat-pricing (i.e. all strengths priced the same) allows the opportunity to save up to fifty percent of the original prescription cost by splitting a higher dose tablet into two dosages. Tablet splitting, however, is not appropriate for all patients and all medications. This article will review the clinical literature that has evaluated the impact of tablet splitting in various treatment settings and discuss a reasonable approach to using tablet splitting as a cost avoidance intervention.

Are Half Tablets Less Effective?

Evidence refuting the comparable effectiveness of half-tablets compared to whole tablets is very limited. Trials tend to be small, retrospective, and lack controls. Favorable results have prompted large health care providers to adopt tablet splitting interventions. In the state of California, a case against Kaiser Permanente claimed that their voluntary tablet splitting policy was mandatory, unsafe, and inconvenient. The California Court of Appeal upheld the policy, finding no evidence that it was unsafe or unfair.³

Table 1. Summary of Clinical Outcomes Using Statin Half Tablets

Study	Design	Endpoints	Outcomes
Duncan MC et al ⁵	Retrospective chart review 109 VA pts Duration: 6-8 wk Excluded TG>400 16 pt split atorvastatin 93 pt split simvastatin	Primary TC: Primary LDL: Secondary NCEP goals:	55% ↓TC or no change 62% ↓LDL or no change 62% met NCEP goal
Gee M et al ⁶	Retrospective 2,019 pts Pts split atorvastatin, lovastatin, and simvastatin	Lipid panel Cost Avoidance Pt Compliance and Satisfaction	↓LDL, ss but not clinically significant ↑HDL (P=0.001) \$138,108 Most complied and were satisfied
Parra D et al ⁸	Retrospective 3,787 VA pts Duration: 1 year Stable simvastatin dose 2,099 unsplit 1,311 split tabs	LDL	LDL unsplit = 112mg/dl LDL split = 111mg/dl
Rindone JP & Arriola, G ⁷	Prospective 60 VA outpatients with hyperlipidemia Duration: 6-8 weeks Switch fluvastatin to simvastatin ½ tablets Dose 8:1 ratio	LDL	ss decrease in LDL 41% reached NCEP LDL goals

TC=Total Cholesterol, LDL=Low Density Lipoprotein, NCEP=National Cholesterol Education Program, HDL=High Density Lipoprotein, ss=Statistically Significant

The clinical outcomes of splitting the statin drug class are the best studied. Table 1 presents a summary of the current findings. One small study comparing one-half 40 mg atorvastatin with a whole 20 mg tablet found no difference in clinical endpoints, measured by low-density lipoprotein (LDL).⁴ Some studies actually found a statistically, but not always clinically, significant decrease in total cholesterol (TC) and LDL in the group taking half-tablets.^{5, 6, 7, 8} Separately, a randomized study of 28 patients by

Rindone comparing similar doses of lisinopril whole and half tablets found no statistical difference in diastolic or systolic blood pressures.⁹ One survey found nine percent of patients took a full tablet (double the dose), instead of a half-tablet, about 3 times a month. Taking the full double dose is a concern associated with tablet-splitting that can be reduced with adequate patient education.

Which Patients Are Good Candidates for Tablet Splitting?

Patients with good visual acuity, physical dexterity, and cognitive ability are the best candidates to split tablets; while those with arthritis, poor eyesight, loss of a limb, or tremors are poor candidates.¹⁴ Peek et al. found that conditions of the hands were not a significant predictor of splitting accuracy.¹⁰ The ability to split tablets varies and should be assessed with each individual.

Which Tablets Can Be Cut?

Not all medications are suitable for splitting. A study conducted by the Veterans Administration (VA), found that the uniformity of tablet splitting varied by drug.⁹ Atorvastatin, citalopram, furosemide, glipizide, metoprolol, paroxetine, sertraline, and warfarin passed weight-uniformity tests, while lisinopril, lovastatin, rofecoxib, and simvastatin did not. However, the clinical relevance of this variation is debatable. In a separate study, 30 elderly men who each split 14 tablets produced weight variations up to 10%. The results of this study found that patients who were taught to use tablet splitters properly performed better than those who did not receive instruction.¹⁰

Table 2 summarizes characteristics of drugs that are suitable and unsuitable for splitting. In general, tablet splitting should be limited to larger tablets that are scored or easy to break. Small tablets, when halved, may vary in weight by more than 15%.¹¹ A study that weighed 11 drugs in various shapes, sizes, and thicknesses before and after splitting found the most accurate results to be from tablets that were large, coated, oblong, and had flat edges.¹² In addition, exposure to air may increase the degradation of certain medications.¹³ As one example, olanzapine half tablets must be used within 7 days.¹⁴ For this reason, patients should be told to split one tablet at a time.

Table 2. Summary of Drug Characteristic for Tablet Splitting.^{4,9,11,14,16}

Medication Characteristics SUITABLE for Tablet Splitting
<ul style="list-style-type: none"> • Tablets • Long half-life • Scored • Flat, oblong, oval shaped • Large size (e.g. 10mm) • Broad therapeutic window
Medication Characteristics UNSUITABLE for Tablet Splitting
<ul style="list-style-type: none"> • Capsules • Enteric-coated or extended release formulations • Frequent dosing changes (e.g. warfarin) • Too hard • Small size (e.g. 7 mm) • Easily crumbles or breaks • Tastes bitter • Narrow therapeutic window

Ideal drug classes for tablet splitting include those with a longer pharmacokinetic half-life and wider therapeutic window. Behavioral health medications (e.g. selective serotonin reuptake inhibitors) that depend on long-term alterations in neurotransmitters are excellent candidates for tablet splitting.¹⁵ Other medications that are linked to significant cost avoidance are listed in Table 3.

Cost Savings

Cohen and Cohen estimated that 10% of U.S. sales from 12 psychotropic drugs could be saved by splitting tablets.¹⁴ In a later analysis confined to antidepressants, Cohen and Cohen found 90% of this savings coming from 3 SSRIs (citalopram, paroxetine, and sertraline).¹⁵ Results from an antidepressant tablet splitting intervention, conducted on behalf of the Office of Medical Assistance Programs, demonstrated that 60% of prescription change forms were accepted by prescribers as appropriate alternatives to current antidepressant medication regimens. An estimated \$31,000 is avoided monthly by switching 956 patients to a half-tablet treatment regimen of four SSRIs (Zoloft, Lexapro, paroxetine, and citalopram). The benefit of tablet-splitting and dose consolidation of certain antidepressant prescriptions is that these are simple changes that maintain the same drug at the same dose while decreasing the cost of the prescription claims by almost half.

One VA documented 50% savings using half-tablets of fosinopril 20 mg for a 10 mg dose.¹⁶ A later study at the Portland, Oregon VA combined the promotion of tablet splitting of SSRIs with preferred agents. The cost per patient for SSRIs declined \$14.93 per month. Projected total savings (over 35 months) was \$700,000 on SSRIs of which \$175,000 was attributed to tablet splitting.¹⁷ Gee concluded that splitting statins allowed double the number of patients to be treated for the same expense. After favorable clinical findings by Parra, the VA splitting of simvastatin for suitable patients realized \$46.5 million savings during 2003.⁸

Which Tablet Splitters Are Best?

Tablets can be split with fingers, teeth, razor blades, knives, or tablet splitters. Manually, the lowest loss and variability occurs by applying the thumbs towards the score side of the tablet.¹⁸ Accuracy improves with a tablet splitter, but may vary with its design.¹⁹ Select tablet splitters that allow easy loading of a tablet to line up with the cutter, unhindered visibility, and a hard blade that can be firmly pressed.^{13,14} Cost is usually nominal, but rises with added features. Oregon Medicaid pays for one tablet splitter per year for fee-for-service (open card) patients. Currently only those tablet splitters with a National Drug Code (NDC) number are reimbursable. Other insurers may have different coverage policies.

Conclusion

Tablet splitting has long been practiced as a means to ease swallowing. This practice can also avoid up to 50% of drug costs with most savings realized from less than 20 drugs. Larger trials of tablet splitting interventions may assist in refining tablet splitting policies. At this point, tablet splitting appears to be an effective intervention that maintains current drug therapy while producing significant cost avoidance. Tablet splitting should be limited to appropriate drugs and appropriate patients.

Reviewed by Steven K. Dobscha, MD, Associate Professor of Psychiatry, OHSU; Sean H. Karbowicz, Pharm.D, Pharmacy Prior Authorization Supervisor, Regence BlueCross BlueShield of Oregon; and Chad O. Murphy, PharmD, Clinical Pharmacist Consultant, The Regence Group

Table 3. Cost Avoidance Associated with Certain Splittable Medications

Drug	Dose	Cost/Month Whole Tablet*	Cost/Month Half Tablet*
Aceon	4 mg daily	\$42	\$26
Atacand	16 mg daily	\$44	\$30
Avapro	150 mg daily	\$45	\$27
Benicar	20 mg daily	\$43	\$21
Cozaar	25 mg daily	\$39	\$23
Lexapro	10 mg daily	\$64	\$33
Lipitor	40 mg daily	\$99	\$50
Micardis	40 mg daily	\$46	\$24
Pravachol	40 mg daily	\$130	\$65
Zocor	20 mg daily	\$125	\$63
Zoloft	50 mg daily	\$77	\$38

*Costs are ingredient costs (no rebate) based on reimbursed claims 1/1/05-6/31/05

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