

Intravenous to Oral Antimicrobial Conversion Program

Drug Information Center

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Background

Many antimicrobial agents have near 100% oral bioavailability. The intravenous forms of these agents are useful in situations where the patient may have compromised gastrointestinal function. However, in cases where the patient is in need of continued antimicrobial therapy but is clinically stable with a functioning GI tract, oral therapy is a viable and preferred option. Many studies have documented the pharmacoeconomic benefit of an automatic, pharmacist-initiated automatic oral conversion program. A medication utilization evaluation published by Novation in 1999 suggests that 49% of patients with community-acquired infections were converted to oral antibiotics during hospitalization and 83% of patients not converted to oral therapy were candidates for such a transition.

Antimicrobial Agents

The agents used at UKMC that are most commonly included in automatic IV to PO conversion programs are levofloxacin and fluconazole. Linezolid is another agent that possesses the same pharmacokinetic properties. Each of these agents has an oral bioavailability of >95%. Levofloxacin is the most commonly used agent of the three while fluconazole has the largest economic benefit per patient.

Criteria for IV to Oral Transition

Patients will be transitioned from intravenous to oral therapy if they meet the following indications:

1. Functioning gastrointestinal tract
 - Tolerating at least 1000ml/day of oral fluids OR 40ml/hr of enteral nutrition.
 - Receiving other oral medication.
2. Clinically stable
 - Afebrile (temperature <38C or 100.4F) for at least 24 hours
 - WBC decreasing toward normal range (if leukocytosis was initially present)
3. Exclusion criteria
 - Patients with an unreliable response to oral medication (i.e. severe N/V, continuous NG suction, short bowel syndrome, motility disorder of the GI system, unresponsive to previous oral therapy).
 - Patients with Grade III or IV mucositis (per medical team progress note).
 - Patients whose disease state does not support oral therapy (i.e. meningitis, endocarditis).
 - Patients on the solid organ transplant service and pediatric patients (both require consultation of the medical team).

Note: Levofloxacin should not be given within 2 hours of any antacid or divalent cation (i.e. calcium, iron, magnesium). The pharmacist responsible for the conversion will address this issue at the time oral therapy is initiated.

Pharmacoeconomic Analysis

The following table illustrates the amount of each agent used, the cost of oral and intravenous doses, and the projected cost savings. Cost savings are based on conversion of 50% of patients 2 days early.

Agent	Daily oral cost	Daily IV cost	Patients	Projected days saved	Total savings
Levofloxacin	\$6.00	\$16.00	1614 (807)	1614	\$16,140
Fluconazole	\$20.00	\$104.00	422 (211)	422	\$35,488
Linezolid	\$88.00	\$112.00	32 (16)	32	\$1024
				Total	\$52,652

Daily costs are based on levofloxacin 500mg QD, fluconazole 400mg QD, and linezolid 600mg BID

Process

Pharmacy Services will generate a daily list of patients receiving targeted intravenous antimicrobials. Patients will then be evaluated by a pharmacist for appropriateness of continued intravenous therapy. If the patient meets the approved criteria for transition to oral therapy, a standardized progress note will be placed in the patient's medical record detailing the conversion. The pharmacist will complete a tracking form to be collected by the Antimicrobial Management Team.

Follow-Up

The Antimicrobial Management Team will report findings and feedback to the Antimicrobial Subcommittee approximately six months after the program starts.