



## Polypharmacy, Complementary and Alternative Medicines (CAM), and Cancer

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### Introduction

This paper problematizes polypharmacy, including CAM, in the context of elderly cancer patients. Further, it reviews the unique findings of studies of CAM use in Hawaii, which offer insights into both the objectives and the measure of CAM use by cancer patients, and suggests that this knowledge can be translated into integrated clinical practice.

### Polypharmacies

Polypharmacy is a coherent preventive and therapeutic strategy in conventional biomedicine, and is used increasingly in the treatment of monodrug-resistant and (re)emergent infections such as malaria, tuberculosis, and cholera (Farmer 1999; Scheld et al. 1998; Scior et al. 2002). Multi-drug regimens also may be effective for disorders for which a substantial proportion of patients experience no or incomplete response to singlet drugs – e.g., cardiovascular disorders, hypertension, and epilepsy (Campos-Castello and Campos-Soler 2004; Gavras and Rosenthal 2004). Today, the term polypharmacy extends to multiple prescriptions from more than one physician, as well as to patient-crafted combinations of prescription drugs, and drugs with other therapeutic modalities. In a more conventional definition, polypharmacy is indicated for co-morbidities, for which the elderly are at especially high risk.

### Polypharmacy among the Elderly

In the U.S. and western Europe the elderly comprise 15%-20% of the population but account for 30-40% of all drug prescriptions. An estimated 90% of community-dwelling older adults take at least one prescription, most take two or more; nursing-home, variably assisted-living, and hospitalized elderly typically take six to nine prescription drugs. Older adults also purchase about 50% of over-the-counter products (Clews et al. 2001; Corcoran 1997; Paille 2004; Pollock 1998). Polypharmacy among the elderly is further confounded by the use of complementary and alternative medicines, for virtually all age-associated conditions. Estimated rates of consumption range between 50% and 90%.

While polypharmacy offers benefits in some clinical contexts, it constitutes substantial risk for all patients, and especially for the elderly. Beginning at about 40 years of age, individuals experience a linear decline in a number of physiologic functions, which can affect pharmacokinetic and pharmacodynamic processes. Possible undesired outcomes of – singlet and especially multiple – drug consumption include altered drug distribution and activity, delayed

and extended-duration effects, and changes in the processes of drug metabolism and detoxification. Polypharmacy significantly increases the risk and severity of adverse drug reactions (ADRs) which correlate directly and exponentially with the number, and number of kinds, of drugs taken and the number of prescribing physicians. The rate of ADRs among older adults is two to seven times higher than for other age sectors (Koda-Kimble and Young 2001).

The annual cost of age-associated drug-related problems is enormous and is compounded by psychological and social disjunctions. Polypharmacy fosters confusion: many elderly have difficulty keeping track of multiple medications, especially those with different but overlapping dosing schedules; anxiety about toxicity and ADRs increases incrementally with added prescriptions. This resonates especially for elderly whose memory of fewer medicines is more vivid than their short-term experience with current prescriptive practices. These and other concerns contribute to invoking other cultural constructions of health and healing that are discrepant with biomedical paradigms, and include actions that may be interpreted by biomedicine as “noncompliance.” One potent expression of patient-driven strategies is self- or home-treatment, including the use of complementary and alternative medicines (CAM).

### Cancers, Polypharmacy, and CAM

An 11-fold greater incidence, and more than half of cancers, occur in individuals aged 65 years or older, among whom the greater likelihood of co-morbidity, coupled with the complex nature of cancer therapies, encourages polypharmacy (Al-Shahri et al. 2003; Lichtman 2003; Terret 2004), including self- or home-treatment. Like its pharmaceutical counterpart, the CAM industry maximizes profit by making available a multiplicity of products that both fill and create niches of “need.” Patients command agency in their own health care by purchasing these products, and through their social transaction create and transform the meaning of the therapeutic experience. A great variety of CAM are promoted specifically for the prevention and treatment of cancers, with estimates of CAM use by cancer patients ranging as high as 85%. CAM typically are used to supplement chemotherapies and for the treatment of side effects of cancer and cancer therapies; only a small percentage of cancer patients use CAM as an alternative to biomedical treatments.

### Cancer and CAM in Hawaii

Our studies of CAM use in Honolulu, Hawaii (Etkin et al. 1999; Etkin and McMillen 2003)<sup>1</sup> explored in depth the cultural constructions

of health and healing in a demographically diverse population, and documented 346 discrete CAM products or processes. Seventy-five percent of CAM reported by study participants are botanicals, which range from treatments for specific disorders such as hypertension to more general objectives such as “general health.” We further refined the research methodology and scope in a subsequent study that focused on hospitalized and out-patients in the oncology unit of a major medical center in Honolulu (Etkin and Ross 2002).

Our research establishes that cancer patients in Honolulu use a wide range of CAM and corroborates the findings of other studies of CAM use in Hawaii and North America. Those other studies were based on surveys rather than in-depth interviews, and are largely descriptive. Our studies add ethnographic depth to reveal how the popularity of CAM is both market-driven and culturally-constructed. The commodification and aggressive marketing of contemporary culture extends to health care and CAM, and encourages consumers to “shop around.” Among the preventive and healing metaphors that guide the interpretation of illness, the idea of ‘holistic’ (whole-body) healing extends beyond the individual to the community and the environment—healthy land, healthy community, healthy individuals. As their experience with cancers increased study participants’ concern for the toxicity of chemotherapy, they were drawn to botanical CAM on the shared perception that “natural” products are safe. Especially compelling for elderly cancer patients are commercial CAM that advertise “cleansing” and “immune boosting” properties. These and related terms (e.g., “cholesterol-lowering,” “antioxidant”) that have diffused into the vernacular through advertising and popular science media are apprehended by the public only as something healthful, without specific information about how to measure the presence or efficacy of these qualities.

No study participant used CAM as an alternative to chemo- and other biotherapies; most sought CAM to strengthen themselves and to manage the anticipated or experienced side effects of conventional treatments. Our research confirmed the image commonly projected in the CAM literature (e.g., Kelner et al. 2004; Richardson et al. 2004) that oncologists and patients have discrepant views about the efficacy and potential risk of CAM. However, while study participants were not inclined to discuss CAM with physicians, they are respectful of their advice and, significantly, would welcome health professionals in a resource role for CAM information. By now, the allied health professions have apprehended just how many patients use CAM and the diversity of products available. Biomedical professionals who do try to engage their patients on the subject of CAM come to appreciate how little reliable information is available about CAM in the context of clinical medicine; and there is growing interest in instructing teaching physicians and other health professionals about CAM (e.g., Ben-Arye and Frenkel 2004).

The findings of both of our studies reinforce the importance of polypharmacy. The risk of ADRs among pharmaceuticals has been amply demonstrated, and while evidence documenting the possibility of ADRs between CAM and pharmaceuticals is limited (Biely 2004; Elvin-Lewis 2001; Sparreboom et al. 2004), the theoretical possibilities are high. Only a very small percentage of all CAM have been systematically tested in clinically meaningful ways, none of the commercial products is subjected to standardization or other regulation (contrary to what many consumers believe, CAM are not regulated by the U.S. Food and Drug Administration). Consequently,

even some of the commercial products that contain botanicals that have been well characterized phytochemically are not reliable.

## Conclusion

The subtext here is not that CAM are without benefit. Indeed, the scientific literature (ethnopharmacology, pharmacognosy, and phytochemistry) suggests significant pharmacologic potential. The point is that in the context of complex physician-driven and patient-augmented polypharmacy, the potential for ADRs is high. This statement implicates pharmaceuticals as much as it does what we might eventually know about CAM, although one could argue that pharmaceuticals will always pose a greater risk in view of the higher potency and concentration of active constituents. The documented risks of ADRs in pharmaceutical polypharmacy, in conjunction with the widespread and apparently growing use of CAM offer a compelling argument to generate clinically meaningful data on the physiologic implications of using CAM and translate that information into integrated clinical practice.

For more information on the Cancer Research Center of Hawaii, please visit our web site at [www.crch.org](http://www.crch.org).

## Notes

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