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1 Savolainen EA, Lee QP. Diabetic retinopathy—need and demand for photocoagulation and its cost-effectiveness: evaluation based on services in the United Kingdom. *Diabetologia* 1982;23:138-40.
2 Rohan TE, Frost CD, Wald NJ. Prevention of blindness by screening for diabetic retinopathy: a quantitative assessment. *BMJ* 1989;299:1198-201.
3 Kohner EM, Barry PJ. Prevention of blindness in diabetic retinopathy. *Diabetologia* 1984;26:173-9.
4 Javitt JC, Canner JK, Sommer A. Cost effectiveness of current approaches to the control of retinopathy in type I diabetics. *Ophthalmology* 1989;96: 255-64.
5 Foulds W, McCuish A, Barrie T, Green F, Scobie IN, Ghafour IM, *et al.* Diabetic retinopathy in the West of Scotland: its detection and prevalence, and cost-effectiveness of a proposed screening programme. *Health Bull* 1983;41:318-26.
6 Sussman EJ, Tsurias WG, Sarper KA. Diagnosis of diabetic eye disease. *JAMA* 1982;247:3231-4.
7 Department of Health and Social Security. *Causes of blindness and partial sight among adults in 1976/77 and 1980/81 England.* London: HMSO, 1988.
8 Diabetic Retinopathy Study Research Group. DRS Group #8. Photocoagulation treatment of proliferative diabetic retinopathy. *Ophthalmology* 1981;88:583-600.
9 Lee CM, Olk RJ. Modified grid laser photocoagulation for diffuse diabetic macular edema. Long-term visual results. *Ophthalmology* 1991;98: 1594-602.
10 Early Treatment Diabetic Retinopathy Study Research Group. Photocoagulation for diabetic macular oedema. *Int Ophthalmol Clin* 1987;27:265-72.
11 Wareham N, Greenwood R. Screening for diabetic retinopathy using non-mydriatic fundus photography. *Diabet Med* 1991;8:607-8.
12 Buxton MJ, Sculpher MJ, Ferguson BA, Humphreys JE, Altman JFB, Spiegelhalter DJ, *et al.* Screening for treatable diabetic retinopathy: a comparison of different methods. *Diabet Med* 1991;8:371-7.
13 Williams R, Nussey S, Humphry R, Thompson G. Assessment of non-mydriatic fundus photography in detection of diabetic retinopathy. *BMJ* 1986;293:1140-2.
14 Moss SE, Klein R, Kessler SD, Richie KA. Comparison between ophthalmoscopy and fundus photography in determining severity of diabetic retinopathy. *Ophthalmology* 1985;92:62-7.
15 Mohan R, Kohner EM, Aldington SJ, Nijhar I, Mohan V, Mather HM. Evaluation of a non-mydriatic camera in Indian and European diabetic patients. *Br J Ophthalmol* 1988;72:841-5.
16 Klein R, Klein BEK, Neider MW, Hubbard LD, Meuer SM, Brothers RJ. Diabetic retinopathy as detected using ophthalmoscopy, a nonmydriatic camera and a standard fundus camera. *Ophthalmology* 1985;92:485-91.
17 Burns-Cox CJ, Dean Hart JC. Screening of diabetics for retinopathy by ophthalmic opticians. *BMJ* 1985;290:1052-4.
18 Taylor R, Lovelock L, Tunbridge WMG, Alberti KGMM, Brackenridge RG, Stephenson P, *et al.* Comparison of non-mydriatic retinal photography with ophthalmoscopy in 2159 patients: mobile retinal camera study. *BMJ* 1990;301:1243-7.
19 Ryder REJ, Vora JP, Atiea JA, Owens DR, Hayes TM, Young S. Possible new method to improve detection of diabetic retinopathy: Polaroid non-mydriatic retinal photography. *BMJ* 1985;291:1256-7.
20 Schacat AP, Hyman L, Leske MC, Connell AMS, Hiner C, Javornik N, *et al.* Comparison of diabetic retinopathy detection by clinical examinations and photograph gradings. *Arch Ophthalmol* 1993;111:1064-70.
21 Kinyoun JL, Martin DC, Fujimoto WY, Leonetti DL. Ophthalmoscopy versus fundus photography for detecting and grading diabetic retinopathy. *Invest Ophthalmol Vis Sci* 1992;33:1888-93.
22 Early Treatment Diabetic Retinopathy Study Research Group. Grading diabetic retinopathy from stereoscopic color fundus photographs—an extension of the Modified Airlie House Classification. ETDRS Report #10. *Ophthalmology* 1991;98:786-806.
23 Altman DG, Bland JM. Diagnostic tests 1: sensitivity and specificity. *BMJ* 1994;308:1552.
24 Leese GP, Ahmed S, Newton RW, Jung RT, Ellingford A, Baines P, *et al.* Use of mobile screening unit for diabetic retinopathy in rural and urban areas. *BMJ* 1993;306:187-9.
25 Sparrow JM, McLeod BK, Smith TDW, Birch MK, Rosenthal AR. The prevalence of diabetic retinopathy and maculopathy and their risk factors in the non-insulin-treated diabetic patients of an English town. *Eye* 1993;7: 158-63.
26 Protocol for screening for diabetic retinopathy in Europe. *Diabet Med 1991;*8:263-7.
27 Kohner EM. Detecting diabetic retinopathy. *BMJ* 1991;302:176.
28 Diabetes Control and Complications Trial Research Group. Color photography vs fluorescein angiography in the detection of diabetic retinopathy in the diabetes control and complications trial. *Arch Ophthalmol* 1987;105: 1344-51.
29 Ellingford A. Diabetic photographic eye screening using a mobile unit in Tayside, Scotland. *J Audiov Media Med* 1992;15:104-7.
30 Ryder REJ, Young S, Vora JP, Atiea JA, Owens DR, Hayes TM. Screening for diabetic retinopathy using Polaroid retinal photography through undilated pupils. *Practical Diabetes* 1985;2:34-9.
31 Rogers D, Bitner-Glindzicz M, Harris C, Yudkin JS. Non-mydriatic retinal photography as a screening service for general practitioners. *Diabet Med* 1990;7:165-7.
32 Jones D, Dolben J, Owens DR, Vora JP, Young S, Creagh FM. Non-mydriatic Polaroid photographs in screening for diabetic retinopathy; evaluation in a clinical setting. *BMJ* 1988;296:1029-30.
33 Finlay R, Griffiths J, Jackson G, Law D. Can general practitioners screen their own patients for diabetic retinopathy? *Health Trends* 1991;23:104-5.
34 Awh CC, Javitt JC, Chong LP, Gehrs KM, Gusman GI, Street DA, *et al.* Ophthalmoscopic diagnosis and referral of diabetic eye disease by primary care physicians. ARVO abstract. *Invest Ophthalmol Vis Sci* 1993;34:713.
35 Gehrs KM, Chong LP, Guzman G, Street DA, Awh C, Cupples H, *et al.* Can we educate primary care physicians about diabetic retinopathy after graduation? Preliminary results of the diabetic retinopathy education study. ARVO abstract. *Invest Ophthalmol Vis Sci* 1993;34:1182.
36 Correspondence. Detecting diabetic retinopathy. *BMJ* 1991;302:174-6.
37 Forrest RD, Jackson CA, Yudkin JS. Screening for diabetic retinopathy. Comparison of a nurse and doctor with retinal photography. *Diabetes Res* 1987;5:39-42.
38 Kleinstein RN, Roseman JM, Herman WH, Holcombe J, Louv WC. Detection of diabetic retinopathy by optometrists. *J Am Optom Assoc* 1987;58:879-82.
39 Jacob J, Stead J, Sykes J, Taylor D, Tooke JE. A report on the use of technician ophthalmoscopy, combined with the use of the Canon non-mydriatic camera in screening for diabetic retinopathy in the community. *Diabet Med* 1995;12:419-25.
40 Ryder REJ. Screening for diabetic retinopathy. *BMJ* 1995;311:207-8.
41 WHO/IDF Europe. Diabetes care and research in Europe: the St Vincent declaration. *Diabet Med* 1990;7:360.

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Prison rites: starting to inject inside

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In 1993 an outbreak of HIV infection occurred within Glenochil prison, caused by sharing of infected needles.[1] To determine the nature of injecting behaviour within prison we performed surveys in two Scottish prisons, Glenochil and Barlinnie, which combined voluntary anonymous testing of saliva samples for HIV and completion of a linked questionnaire asking about risk factors.[2]

Subjects, methods, and results

The surveys were performed in Glenochil prison in July 1994[3] and in Barlinnie prison in September 1994.[4] Seventy five questionnaires in Glenochil and 327 in Barlinnie were from injector-inmates; 25% of injectors in Glenochil (18/72, 95% confidence interval 15% to 35%) and 6% (20/319; 3% to 9%) of Barlinnie injectors reported that they had started to inject inside a prison.[2,4] Half the prisoners, and three quarters of injectors, came from Glasgow. Barlinnie is a local prison for the Glasgow area, whereas Glenochil holds men serving longer sentences from throughout Scotland. Self reported information from injector-inmates was pooled to inquire into the characteristics of the 38 men who started to inject inside prison.

A third (23/72) of Glenochil's injector-inmates in July 1994 had injected in Glenochil prison between January and June 1993.[2,3] Starting to inject inside was acknowledged by 2/72 injector-inmates in Barlinnie who first injected before 1983; by 8/159 who began in 1983-8; and by 10/88 who first injected after 1988. Nine (17%) out of 53 Barlinnie injectors whose sentence began in 1993 or earlier had started to inject inside. Only 5% of 245 Glasgow injector-inmates had started to inject inside but 11% had from elsewhere (8/73). Four per cent of Barlinnie's injector-inmates (12/324) had injected in Glenochil prison during January to June 1993, five having started in prison.

Injector-inmates from outside Glasgow were more likely than Glaswegians to have started to inject inside (table: ln odds of −1·1, SE 0·4), as were those whose injecting career began most recently (after 1988) (ln odds trend: −0·66, SE 0·27). Injector-inmates who injected in Glenochil prison between January and June 1993 included disproportionately many who had started to inject in prison (odds ratio of 8:1). Injector-inmates whose sentences began in 1993 were the most likely to have started to inject in prison (odds ratio of 4:1) and remand prisoners were least likely. The 95% confidence interval (0·5 to 4·8) for the odds by prison on having started to inject inside included one.

Linear logistic risk score for an injector-inmate having started to inject in prison

Covariate	Glenochill (n=72) % Frequency	Barlinnie (n=319) % Frequency	In odds coefficient	Standard error	Odds ratio	95% Confidence interval for odds ratio
Glasgow	75	78	−1·1	(0·4)	0·3	0·15 to 0·75
First injected before 1983	21	23	−1·3	(0·6)	0·3	0·09 to 0·85
First injected between 1983 and 1988	43	49	−0·7	(0·4)	0·5	0·21 to 1·12
Present sentence started in 1993	37	14	1·3	(0·5)	3·7	1·3 to 10·1
Present sentence started before 1993	55	2	0·5	(0·8)	1·7	0·4 to 7·6
Remand prisoner	0	22	0·7	(0·8)	0·5	0·1 to 2·4
Injected in Glenochil during Jan-June 1993	31	4	2·1	(0·6)	8·1	2·5 to 25·8
Glenochil prison	—	—	0·4	(0·5)	1·5	0·5 to 4·8
Intercept			−1·8	(0·4)		

Covariate adjustment had thus largely accounted for the differential (25% *v* 6%) in starting to inject inside, but the wide interval does not rule out an establishment effect.

In the combined dataset 238/1212 men (20%) had never been inside prison before and were non-injectors when received into prison, but four (1 in 60, or 1·7%) started injecting during their first sentence. This disturbing rate of conversion to injecting predicts over 100 new injectors from 7000 estimated first admissions to prison per year of non-injecting males in Scotland.

Comment

Inmates from a needle exchange area like Glasgow will continue to inject when imprisoned and may introduce other prisoners to injecting. Various scenarios about HIV transmission in Glenochil prison and starting to inject inside can be considered. Firstly, individuals who first injected inside and were likely to continue during future sentences may have been together in Glenochil. Secondly, non-injectors convicted in 1993 from outside Glasgow, held together in Glenochil with Glasgow men, might have begun to inject there. Thirdly, some change in policing or sentencing policy might have resulted in the conviction of men adept at introducing drugs and injecting equipment into prison and initiating the practice in a group of novices.

Our data are hypothesis generating, not conclusive. They warn that each year more than 100 men in Scotland may start injecting drugs in the high risk, needle sharing environment of prison. The problem is not a new one[5] but has recently worsened—17% of injector-inmates who first injected after 1988 had started while in prison (19/114)—and has serious implications for transmission of bloodborne viruses. Prisons need to understand how initiation occurs and to support non-injectors, particularly those never imprisoned before, so that they can avoid starting to inject inside.

We pay tribute to inmates' willingness to contribute to public health information, and to the Scottish Prison Service's commitment to evidence based determination of health policy in prisons.

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1 Taylor A, Goldberg D, Emslie J, Wrench J, Gruer L, Cameron S, *et al.* Outbreak of HIV infection in a Scottish prison. *BMJ* 1995;310:289-92.
2 Bird AG, Gore SM. Inside methodology: HIV surveillance in prisons. *AIDS* 1994;8:1345-6.
3 Gore SM, Bird AG, Burns SM, Goldberg DJ, Ross AJ, Macgregor J. Drug injection and HIV prevalence in inmates of Glenochil prison. *BMJ* 1995;310: 293-6.
4 Bird AG, Gore SM, Cameron S, Ross AJ, Goldberg DJ. Anonymous HIV surveillance with risk factor elicitation at Barlinnie Prison. *AIDS* 1995 (in press).
5 Strang J, Orgel M, Farrell M. Well users clinic for illicit drug users. *BMJ* 1989;298:1310.

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MYTHOLOGY AND MEDICINE

The elderly and quality of life

The goddess Eos (Aurora) fell in love with the mortal Tithonus and begged Zeus to grant him immortality. Alas, she forgot to ask for eternal youth and vigour and after many years of happiness Tithonus aged and life became unsupportable. Initially Eos looked after him but when his appearance became unsightly she confined him in a room and changed him into a grasshopper. Elderly Tithonus could no longer move and only the sound of his voice could be heard.[1]

Immortality has always been man's dream. Although this is only wishful thinking, it is now possible to live a long healthy life. Today people in industrialised nations live longer and it seems that the life span can be extended even further. The presence of respiratory, cardiac, neoplastic, and cerebrovascular diseases in the elderly cause suffering, as well as reduced ability to perform common daily activities. The increase in the quantity of life is not matched by the same improvement in quality up to the moment of "natural death." In a patriarchal society this means that the elderly must be looked after by their relatives, and the fast paced present day society often looks on elderly relatives as lovely intruders. In more individualistic societies non-self sufficient elderly people are often left to themselves or institutionalised, both solutions involving psychophysical issues and high costs.

We assessed self sufficiency in 400 elderly subjects and found almost complete self sufficiency in 8% of octogenarians, 3% of nonagenarians, and in 0·5% of centenarians.* The overall level of autonomy was higher in women than in men. The diseases characteristic of old age lead to discontent and social unease triggering off depression, loneliness, and a sense of abandonment. Advanced years free from inevitable organ deterioration and progressively more distress still seem a utopia.

The correct balance between scientific progress and the confines of nature should be achieved if people are to enjoy this longer life before death strikes. The lengthening of the average life span and the delaying of death as long as possible may mean, however, that elderly people are abandoned and unhappy. It would echo Aurora's mistake —to immortalise the object of her dream and imprison him, alone and forgotten, in a room.—M MALAGUARNERA, G PISTONE, and M MOTTA *work in the Department of Internal Medicine and Geriatrics, University of Catania, Italy*

1 Graves R. *Greek myths.* London: Penguin 1995:150.

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We welcome filler articles of up to 600 words on topics such as *A memorable patient, A paper that changed my practice, My most unfortunate mistake,* or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disc.