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Caring for sex workers

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Sex workers are adults who receive money or goods for sexual services, either regularly or occasionally,[1] including female, male, and transgendered sex workers.[2 3] Youths under 18 years who sell sex are sexually exploited and not included in the definition.

Caring for sex workers seeking health services requires knowledge, flexibility, open mindedness, and, above all, a non-judgmental attitude. Practitioners can be directly involved in curing communicable diseases, preventing chronic conditions, and helping patients through a sometimes difficult period. Sex workers are at higher risk of many conditions (box 1), but they may also have ongoing chronic disease issues. This article provides an evidence based review (see box 2 for details of data search) of the specific health needs of sex workers, aimed at non-specialist hospital doctors, general practitioners, and candidates for postgraduate examinations globally.

Box 1 | Health issues for sex workers

- HIV infection—Evidence from systematic reviews and meta-analyses[4-7]
- Sexually transmitted infections (gonorrhoea, chlamydia, syphilis, herpes (HSV-2), trichomonas, human papillomavirus)—Evidence from analytical and observational studies[2 8-17]
- Complications of sexually transmitted infections (pelvic inflammatory disease and ectopic pregnancy)—Evidence from analytical and observational studies[2 8-17]
- Hepatitis A, B, and C—Evidence from observational studies[18-24]
- Tuberculosis—Expert opinion[24 25]
- Unmet contraceptive need, unplanned pregnancy, unsafe abortion, inadequate pregnancy care, newborn complications—Evidence from cross sectional surveys, case series, and qualitative studies[16 24-39]
- Non-injected and injected drug use, alcohol dependence, tobacco use—Evidence from systematic reviews and meta-analyses, analytical and observational studies[40-59]
- Physical violence, especially rape—Evidence from cohort studies, case series, cross sectional surveys[2 3 60-66]
- Mental health disorders (depression, suicidality, post-traumatic stress disorder)—Evidence from cross sectional surveys, case series, observational studies[2 3 16 24 25 41-44 55 60 67-72]

What happens when sex workers access health care?

Sex workers often hide their involvement in sex work and drug use due to fear of being judged and treated poorly.[3 47 73-77] When they disclose their occupation, they often experience stigmatising behaviour from staff, disapproval, shaming, other patients staring, and questioning about their work in a sexualising and degrading manner.[47 73 76 77] Many health workers have limited training on sex work and do not know how to deal with sex related issues in general.[73 77-79]

Sex workers often face structural barriers to accessing health care such as long waits, restrictive hours, unwelcoming spaces, fear of arrest, legal status requirements, inconvenient location, lack of transportation, inability to pay, lack of confidentiality, and no access to a social worker.[73 77 80-82]

Resources permitting, many sex workers in low-resource settings will attend private services, citing quality, respect, and confidentiality.[83-85] However, most will attend good quality, affordable public clinics if they are available.[73 75 77 82 86] Where sex workers, especially injecting drug users, experience barriers, a common strategy is to go to a hospital emergency room.[73 74 77 87] When no alternatives are available, sex workers may self medicate; consult traditional healers, drug store operators, pharmacists, street vendors, or friends; travel home for treatment; delay treatment; or not seek care at all.[73 77 82 83 86 88]

Access to a non-judgmental family doctor is one of the main issue facing sex workers, and some never see a healthcare provider.[73 77]

What preventive health measures are available to sex workers?

Vaccination

Close contact with clients of unknown vaccination status means that sex workers should be up to date for diphtheria-tetanus (DT), measles-mumps-rubella (MMR), meningococcal, influenza, hepatitis A, and hepatitis B vaccination.[19 24 27 89-91] Human papillomavirus infection is causally related to cervical, anogenital, and oral neoplasms. Human papillomavirus vaccine protects against type-specific, pre-neoplastic genital lesions and genital warts in unexposed females and males. International vaccination schedules vary but, where feasible, sex workers should be offered this vaccine.[14-16 90 92-95]

HOW WERE PATIENTS INCLUDED IN THE CREATION OF THIS ARTICLE?

The Network of Sex Work Projects reviewed an early draft of the article and provided helpful suggestions.

THE BOTTOM LINE

- Ensure vaccinations are up to date (diphtheria-tetanus (DT), measles-mumps-rubella (MMR), meningococcal, influenza, hepatitis A, hepatitis, B and human papillomavirus)
- Provide regular screening and management for sexually transmitted infections, HIV infection, cervical and anogenital cancer, hepatitis B and C viruses, tuberculosis, and drug, alcohol, and tobacco dependence
- Improve reproductive health by means of dual contraception, safe abortion, and emergency oral contraception
- Prevent HIV, sexually transmitted, and blood-borne infections via pre-exposure prophylaxis, post-exposure prophylaxis, condoms, lubricant, needle-syringe exchange programmes, and male circumcision
- Expedite sexual assault survivor services
- Ensure comprehensive mental and transgender health care

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Previous articles in this series

- Management of sharps injuries in the healthcare setting (*BMJ* 2015;351:h3733)
- Acute rheumatic fever (*BMJ* 2015;351:h3443)
- Normal lower limb variants in children (*BMJ* 2015;351:h3394)
- Dementia: timely diagnosis and early intervention (*BMJ* 2015;350:h3029)
- Sepsis in children (*BMJ* 2015;350:h3017)

Box 2 | Sources and selection criteria

I searched PubMed, Embase, PsychInfo, Social Work Abstracts, Social Science Abstracts, and Web of Science using the terms "prostitution," "risk reduction," "sex work," "sex worker," "sex trade," "prostitute," "survival sex," "transactional sex," and "harm reduction." Reference lists from selected articles and widely used textbooks on HIV and sexually transmitted infections were reviewed. I consulted the BMJ Group's Clinical Evidence series and the Cochrane Collaboration.

With the key words above, I searched non-peer reviewed work using Google; websites and publications of the United Nations (UN), Joint United Nations Programme on HIV/AIDS (UNAIDS), and World Health Organization (WHO); and information from select non-governmental organizations. I chose articles according to the following hierarchy: meta-analyses, randomised controlled trials, analytical studies, systematic reviews, observational studies, UN, UNAIDS, and WHO publications, commentaries, and editorials. Large studies were preferred. Using the Journal Citation Reports database, I prioritised high impact journals. Non-peer reviewed work was searched for additional issues.

Regular screening for sexually transmitted infections, cancer, and tuberculosis

Sexually transmitted infections are often asymptomatic, and delayed treatment can lead to pelvic inflammatory disease and ectopic pregnancy.[8-17 24 25] In randomised controlled trials regular screening of sex workers reduces the incidence of sexually transmitted infection and HIV infection, increases condom use, and prevents sexually transmitted infection complications.[24 96-103]

In a Côte d'Ivoire prospective cohort study, monthly screening of female sex workers by means of interview, vaginal examination (bimanual, external, and speculum), and microscopy significantly reduced HIV, chlamydia, and gonorrhoea infections and increased consistent condom use.[102] Voluntary screening for sexually transmitted infection received sex worker support in a global consultation[83] and a Madagascar study.[104] Cervical cancer screening using a Pap smear test, visual inspection with acetic acid, or human papillomavirus testing promotes early detection and treatment, reducing morbidity and mortality.[24 105] Anal Pap smear testing is also feasible.[106]

The WHO recommends that sex workers be offered periodic screening for asymptomatic sexually transmitted infections[24] and 3-yearly cervical cancer screening.[105] For HIV-infected sex workers, the WHO recommends annual cervical cancer screening and periodic tuberculosis screening.[24]

HIV voluntary counselling and testing

HIV infection often goes undetected. Analytic studies show that provider-initiated voluntary counselling and testing facilitates diagnosis, behaviour change, and access to HIV related services.[83 97 107-109] A meta-analysis of voluntary counselling and testing recipients in low income countries showed a significant reduction in unprotected sex.[108] However, most sex workers in low resource settings have not been tested for HIV infection.[24 109 110] The WHO recommends voluntary counselling and testing whenever a sex worker requests it, at least annually.[24]

The WHO recommends that sex workers be offered periodic screening for asymptomatic sexually transmitted infections and 3-yearly cervical cancer screening

HIV post-exposure prophylaxis

A Cochrane review supports post-exposure prophylaxis for occupational exposure to HIV,[111] and guidelines for 28 days of two or three antiretroviral agents started within 72 hours are available.[112]

Because the probability of HIV transmission via unprotected sex and needle sharing is similar to occupational exposure, post-exposure prophylaxis should be offered to eligible sex workers experiencing an unplanned exposure (sexual or via injected drug use) to an HIV infected person.[113-116] For exposure to someone of unknown HIV status, the provider and sex worker should jointly decide, based on local HIV prevalence, exposure type, and factors such as trauma and co-existent sexually transmitted infections.[114] Rape survivors should be prioritised for post-exposure prophylaxis because of the likelihood of genital injuries and to help overcome psychological trauma.[114]

Post-exposure prophylaxis after unplanned insertive sexual exposure has not been studied. Post-exposure prophylaxis after regular sexual exposure might lead to continuous antiretroviral prophylaxis that may be ineffective and toxic. Post-exposure prophylaxis is not indicated for oral sex.

HIV pre-exposure prophylaxis

Pre-exposure prophylaxis refers to preventing HIV acquisition via sexual services or injected drug use by using antiretrovirals ahead of time.[117-119] Two large and scientifically-sound meta-analyses showed a decrease in HIV risk approaching 92% with good adherence to daily oral pre-exposure prophylaxis with tenofovir or tenofovir-emtricitabine combination, and 39% for coitally timed tenofovir 1% vaginal gel.[117-120] Studies were conducted in populations of sex workers, men who have sex with men, transgender women, heterosexuals, and injecting drug users.[107 119-122] There was no relationship between transactional sex and HIV incidence or pre-exposure prophylaxis adherence.[107 120 121]

Sex workers are at high risk of HIV acquisition because of their vulnerability, lack of control over condom use, and low risk perception with intimate partners.[107] The WHO and Centers for Disease Control (CDC) recommend that sex workers be offered daily oral pre-exposure prophylaxis with tenofovir-emtricitabine or tenofovir-lamivudine, which are equivalent.[123-126] Limited data show no adverse effects of tenofovir-emtricitabine in pregnancy or during breast feeding, but there are no data on the long term health effects in HIV uninfected individuals.[119 123 125]

Pregnancy prevention

Female sex worker surveys in Tanzania and Madagascar estimated pregnancy rates from 17.8 to 53.0 per 100 person-years.[127-129] Unfortunately, sex worker pregnancies are often unintended, and in some countries this leads to unsafe abortions.[17 24 25 35 38 39 127-135] This often reflects a reliance on condoms alone to prevent pregnancy.[38] Observational studies report inadequate knowledge, access, and use of non-condom contraception by sex workers despite the importance of preventing pregnancy.[38 39 127 128 131] Sex workers should be offered a dual method of contraception, such as long acting intramuscular progesterone or

oestrogen implant, oral contraceptives, intrauterine device, or diaphragm.[4 38 39 40 127 129 131]

Sex workers should be made aware of the emergency oral contraceptive ("morning after pill") and that it is effective up to 72-120 hours after unprotected intercourse.[24] In the event of pregnancy, sex workers require regular voluntary counselling and testing and sexually transmitted infection screening because many will continue to work and may be unaware of vertical transmission of HIV and sexually transmitted infections.[136]

Male circumcision

Three randomised controlled trials have shown that circumcision for heterosexual men reduces acquisition of HIV and other sexually transmitted infections and penile cancer.[98 137-142] A systematic review and subsequent observational studies in men who have sex with men show that circumcision protects the insertive but not the receptive partner from sexually transmitted infections and HIV.[141 143-146] Male circumcision may protect heterosexual women from non-HIV sexually transmitted infections.[137 147 148]

Safe sex promotion and needle-syringe programmes

An extensive Cochrane review of male condoms for reducing heterosexual HIV sexual transmission yielded a 0.17 risk ratio.[149] Analytical studies have shown that female condoms prevent pregnancy and sexually transmitted infections, and there is in vitro evidence and biological plausibility for prevention of HIV infection.[2 150 151] Prospective observational cohort studies show that promoting male condoms to sex workers decreases sexually transmitted infections and HIV infection[2 83 97 98 107 152] and adding female condoms provides additional protection.[97 150 151]

For anal sex among men who have sex with men and transgender people, a WHO systematic review concluded that male condoms reduced HIV transmission by 64% and transmission of sexually transmitted infections by 42%.[152-155] However, slippage and breakage are increased.[156] Studies of female condoms for anal sex among men who have sex with men showed slippage, pain, and rectal bleeding,[157] and there are no transmission studies of HIV or sexually transmitted infection.

Studies have found that use of water soluble lubricants with male condoms is acceptable to sex workers and reduces breakage, pain, and trauma,[2 3 83 97 155 156] but non-water based lubricants increase male condom failure.[83 152 158 159] Lubricants without condoms increase sexually transmitted infection risk.[152 159 160] Vaginal and rectal microbicide research in sex workers is under way, but tenofovir vaginal gel has low tolerability when applied rectally.[98 152] This author recommends against microbicides.

Drug injecting sex workers should have access to needle-syringe programmes to prevent HIV and bloodborne virus transmission.[24]

Box 3 | Care for sexual assault survivors[24]

- Provide private, confidential, and supportive first line assessment urgently
- Take a history and offer to do a full physical examination
- Offer HIV post-exposure prophylaxis if the rape occurred within 72 hours, if the patient's HIV status is uninfected or unknown, and if he or she is not using HIV pre-exposure prophylaxis
- Offer emergency oral contraceptive if the rape occurred within 120 hours even if the patient is using dual or hormonal contraception
- Offer single dose oral sexually transmitted infection prophylaxis for chlamydia, gonorrhoea, and trichomonas—such as 2 g azithromycin + 800 mg cefixime + 2 g metronidazole
- Encourage immediate and follow-up syphilis testing (cefixime + azithromycin may cure incubating syphilis, but neither is first line therapy so screen and retest)
- Offer vaccination for hepatitis B or hepatitis A and B if the patient is not known to be immune
- Offer referral to a supportive social worker, psychologist, or legal resource
- Keep a confidential record of the visit, with the patient's consent
- Offer to support sex workers who decide to report the rape to the authorities
- Provide ongoing support and follow-up care as needed for at least three months
- Watch for post-traumatic stress disorder and arrange appropriate therapy

QUESTIONS FOR FUTURE RESEARCH

What is the impact of decriminalisation or legalisation on sex worker health?

Ongoing trials among female sex workers will identify whether sex worker-related factors could alter the effectiveness of pre-exposure prophylaxis—such as sex frequency, lubrication, trauma, and concurrent sexually transmitted infections.

Ongoing research will assess the effectiveness of vaginal and rectal microbicides.

Do female condoms reduce HIV and sexually transmitted infection transmission during anal sex?

Do female condoms reduce heterosexual HIV transmission?

Do sex workers require pneumococcal vaccination?

Is human papillomavirus vaccine safe and effective when it is given in a two dose schedule?

Should post-exposure prophylaxis be used for unexpected insertive sexual exposure?

Does male circumcision reduce HIV acquisition for male sex workers and transgender sex workers engaging in penile-vaginal and penile-anal sex?

Is sexually transmitted infection syndromic management effective for anorectal syndromes?

Is empiric treatment for sexually transmitted infection useful after unprotected sex with a symptomatic partner?

For people who fail opioid substitution therapy, will supervised self administration of injectable diacetylmorphine or hydromorphone be effective?

Two large and scientifically-sound meta-analyses showed a decrease in HIV risk approaching 92% with good adherence to daily oral pre-exposure prophylaxis with tenofovir or tenofovir-emtricitabine combination, and 39% for coitally timed tenofovir 1% vaginal gel

What are the treatment needs of sex workers?

Universal antiretroviral therapy

The WHO currently recommends antiretroviral drugs for HIV infected adults and adolescents with a CD4 count ≤500×10^6 cells/L, clinical stage 3-4, and those in sero-discordant relationships.[161] This argues for universal antiretroviral therapy for

Treatment of sexually transmitted infection among sex workers should be prompt, evidence based, and acceptable. Single dose oral regimens are preferable

all HIV positive sex workers regardless of CD4 count or clinical status because their occupation necessarily involves HIV serodiscordant liaisons. By offering antiretroviral therapy to all HIV infected sex workers whenever they are ready, millions of HIV infections can likely be averted, and the potential reduction in morbidity and mortality is enormous.[42 107 124 162-165]

Early antiretroviral therapy also benefits individuals by suppressing viral replication, normalising T cells, and reducing non-HIV comorbidities, AIDS progression, and death.[164 166-178] Two large randomized, controlled prospective cohort studies in Africa showed highly significant reductions in death, serious illness and progression to AIDS in patients starting ARVs at >500 CD4 cells/mm3 versus patients started at <200-350 cells/mm^3 or when they were diagnosed with an AIDS-defining illness.[179 180]

Enhanced treatment of sexually transmitted infection

Studies show that treating sexually transmitted infections in sex workers decreases morbidity, prevents transmission of HIV and sexually transmitted infection, and reduces complications of sexually transmitted infection.[2 24 25 97 107 155 181-183] Treatment of sexually transmitted infection among sex workers should be prompt, evidence based, and acceptable. Single dose oral regimens are preferable.

In resource poor settings, syndromic management of sexually transmitted infections identifies common syndromes based on history and guides treatment based on local epidemiology.[155 182] However, effectiveness is poor for vaginal discharge and unknown for anorectal syndromes.[24 97 107 155 181 184] Sex workers' physicians can do better by performing external and internal vaginal and rectal examinations. Candidiasis is diagnosed by vulvovaginal redness, and cervicitis produces visible cervical mucopus and easy bleeding. Painful anal discharge is usually caused by herpes simplex virus 2, and painless discharge by gonorrhoea or chlamydia. Treatment after genital examination can be more targeted and safer.

Periodic presumptive treatment is one to six monthly antibiotic prophylaxis for curable sexually transmitted infections based on risk and prevalence.[24 97] A meta-analysis of research with female sex workers showed benefit,[185 186] but periodic presumptive treatment is unacceptable to many sex workers who fear stigmatisation, antibiotic resistance, and difficulty maintaining condom use.[83 97]

Access to safe abortion

There are 22 million unsafe abortions annually accounting for 47 000 deaths and five million disabilities.[133] In a large survey of Kenyan female sex workers, 86.1% reported an unplanned pregnancy ending in unsafe abortion, and 50.9% reported two.[35]

In low resource settings, hospital based surgical abortions are often unavailable, but oral mifepristone and/or misoprostol are commonly used for safe medical abortion.[133-135 187 188] The WHO supports use of these oral synthetic prostaglandins , and low doses are safe and effective throughout pregnancy.[133 189-191] Where practitioners do not feel competent to prescribe and monitor medical abortion, they should provide information on abortion options to female sex workers and prompt referral to trained abortion providers. They should also be aware that many pregnant women in low resource settings can and will access misoprostol without a prescription.

Caring for survivors of sexual assault

Rape is the physically forced or otherwise coerced penetration of the vulva or anus with a penis, other body part, or object.[192] Sex workers' doctors need to be aware of local protocols to provide expedited care for sexual assault survivors (box 3) because they are frequent targets of coerced sex and rape.[192-197]

Mental wellbeing

Mental health is strongly influenced by environmental factors and social circumstances including stigmatisation. Thus, sex workers are particularly vulnerable to mental health problems[24] that may complicate prevention, treatment, and continuing care. Many surveys and observational studies of sex workers report depression, self harm or suicide, anxiety, and post-traumatic stress disorder.[25 26 41-44 56 61 67-72 198 199] In one multi-country survey, 68% of 854 sex workers met the diagnostic criteria for post-traumatic stress disorder.[200]

WHO's mhGAP (Mental Health Gap Action Programme) Intervention Guide provides step-by-step assessment and management flowcharts for care, psycho-education, adjunct treatments, and pharmaceutical interventions including antidepressants, antipsychotics, and benzodiazepines.[201]

Transgender health

Transgender sex workers face special challenges from hormone and silicone use, gender reassignment surgery, and transphobia.[3 6 13 18 41 42 44 64 65 72 155 202-205] Most transgender

HOW CAN HEALTHCARE SERVICES BE TAILORED TO SEX WORKERS' NEEDS?

Non-judgmental attitudes—The most important quality that sex workers want in their health provider is a non-judgmental attitude toward sex work, sexuality, and drug use.[3 34 73 77 82 83 85 214-221] Respect, acceptance, and patience are critical attributes.

Sex worker-friendly services—Sex workers often feel alienated by clinic spaces and office atmospheres and excluded by structural barriers.[73 77 80-83 220 221] Offices and services can be made sex worker-friendly in the following ways:

- Ask local sex worker community groups for advice
- Offer convenient opening hours, such as a regular evening clinic
- Shorten wait times by giving sex workers priority at certain times
- Arrange sessions only for sex workers or for certain language or cultural groups
- Hire staff who can act as interpreters or cultural mediators
- Provide childcare or a child-friendly waiting area
- Have supportive social workers onsite or nearby
- Employ transgender people, gay men, or sex workers themselves
- Consider peer based managed or co-managed clinics and programmes
- Make the waiting area inviting with information addressing sex worker concerns, such as nutrition, confidentiality, navigating the health system, and reproductive health
- Use screening questions that don't unnecessarily pry into patients' private lives
- Separate the front desk from the waiting room so other patients cannot overhear
- Try innovative strategies such as emergency drug pickups and patient-held records
- Allow flexible payment options such as sliding scale services

Shared decision making—Providers should be flexible and client centred when developing a care plan by involving sex workers in decisions based on simple and clear education materials addressing their issues. Sex worker services often provide general information, but few focus on concerns specific to sex workers.[3 24 73 77 83 222] Some patients will benefit from empowerment training and support from sex worker community groups.

Screened and affirming referral network—A "one stop shop" for sex workers is not usually feasible. Their doctors need a high quality, unprejudiced referral network, including medical and addictions specialists, nutritionists, legal and immigration advocates, housing and social workers and practitioners of alternative medicine (such as acupuncture, naturopathy, meditation, and massage therapy).[3 73 77 83]

ADDITIONAL EDUCATIONAL RESOURCES

Resources for patients seeking information, support, referral, and empowerment

- Global Network of Sex Work Projects (NSWP). www.nswp.org
- Sex Workers Outreach Project (SWOP). www.swopusa.org
- Desiree Alliance. www.desireealliance.org
- CATIE. www.catie.ca
- UKNSWP—UK Network of Sex Work Projects. www.uknswp.org
- Global Network of Sex Work Projects. www.gn.apc.org
- Paolo Longo Research Initiative. www.plri.org
- Asia Pacific Network of Sex Workers. www.sexwork.asia
- Project Safe. www.projectsafephilly.org
- St James Infirmary. http://stjamesinfirmary.org/

Resources for healthcare professionals

- WHO. Mental Health Gap Action Programme (mhGAP) Intervention Guide. 2010. www.who.int/mental_health/mhgap
- WHO. Prevention and treatment of HIV and sexually transmitted infections among men who have sex with men and transgender people. 2011. www.who.int/hiv/pub/guidelines/msm_guidelines2011/en/
- WHO. Implementing comprehensive HIV/sexually transmitted infection programmes with sex workers: practical approaches from collaborative interventions. 2013. www.who.int/entity/hiv/pub/sti/sex_worker_implementation/en/
- WHO. Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations. 2014. www.who.int/entity/hiv/pub/guidelines/keypopulations/en/
- WHO. Guidance on oral pre-exposure prophylaxis (PrEP) for serodiscordant couples, men and transgender women who have sex with men at high risk of HIV. 2012. www.who.int/entity/hiv/pub/guidance_prep/en/
- WHO. Guidelines for the screening, care and treatment of persons with hepatitis C infection. 2014. www.who.int/entity/mediacentre/news/releases/2014/hepatitis-guidelines/en/
- WHO. Guidelines for the prevention, care and treatment of persons with chronic hepatitis B infection. 2015. www.who.int/entity/mediacentre/news/releases/2014/hepatitis-guidelines/en/
- WHO. Safe abortion: technical and policy guidance for health systems. 2012. www.who.int/reproductivehealth/publications/unsafe_abortion/9789241548434/en/

sex workers live as their self identified gender, making hormone treatment the most important gender enhancement practice.[44 65 72 155 205] Stigmatisation forces many to obtain hormones illicitly and self inject.[24 42 155 205] Injected silicone can be fatal.[65 155] Medically supervised hormonal therapy facilitates healthcare engagement, including safe injecting and antiretroviral therapy adherence.[42 44 206] For transgender women who undergo vaginoplasty, condoms with water-based lubricant are especially important.[42]

Hepatitis treatment

Sex workers have elevated rates of infection with hepatitis C and B viruses.[18-24] Both can be effectively treated to reduce morbidity and mortality.[161 207-211] Eligible sex workers should be referred to appropriate providers who can prescribe and monitor treatment.

Drug and alcohol dependence

Sex workers report high rates of non-injection and injecting drug users, alcohol dependence, and tobacco use.[2 3 24 40-59] Prospective and retrospective studies demonstrate that agonist outpatient opioid substitution therapy is safe and cost effective at reducing drug use, needle sharing, HIV and bloodborne virus transmission, overdose, criminal activity, health risks in pregnancy, and initiation into injecting.[24 201 212-217] Antiretroviral therapy and needle-syringe programmes enhance these benefits.[213] The WHO recommends that opioid dependent sex workers should have access to opioid substitution therapy including "take home" naloxone for overdose. Health professionals seeing sex workers should be familiar with local procedures to help them gain access to this treatment.[218] Cocaine, amphetamine-type stimulant, benzodiazepine, and alcohol dependence management is delineated in WHO's mhGAP guide.[201]

ANSWERS TO ENDGAMES, p 35 For long answers go to the Education channel on thebmj.com

CASE REVIEW

Tumour biomarkers: diagnostic, prognostic, and predictive

1 Tumour (or cancer) biomarkers are biological molecules that suggest the presence of cancer in a patient. Biomarkers may also be used to characterise known tumours. They are either produced by the tumour itself or by the body in response to the tumour.

2 Diagnostic biomarkers helped identify and support the diagnosis, prognostic biomarkers helped estimate prognosis, and predictive biomarkers suggested a possible treatment.

3 The diagnostic biomarkers, ER and E-cadherin, helped determine that the solitary brain lesion was malignant (E-cadherin) and had metastasised from the breast (ER positive).

4 Prognostic biomarkers, such as ERs and PRs, indicate the likely outcome of disease. They can provide a more accurate prognosis and may help select patients for treatment, although they do not necessarily predict the response to it. Despite this patient's prognosis being poor because of the late clinical stage (IV), ER and PR positivity improves the chance of survival.

5 Predictive biomarkers are used solely to assess whether a certain treatment, such as a chemotherapy agent, may be of potential benefit to a specific patient. Positivity for ER and Her2 suggests that tamoxifen (ER antagonist) and trastuzumab (monoclonal antibody that interferes with Her2 receptors) may be effective in this tumour type.

SPOT DIAGNOSIS

Plain radiograph in a neonate with abdominal distension

This plain radiograph shows pneumoperitoneum with four characteristic radiographic findings of pneumoperitoneum. It shows decreased density of the liver shadow, also known as the hyperlucent liver sign, and the cupola sign, in which the central leaf of the central tendon of the diaphragm is highlighted by gas. The radiograph also shows the double wall sign, or Rigler's sign, which indicates the presence of gas on both sides of the bowel wall. The falciform ligament sign, visible as a linear density, is also seen.

See thebmj.com for extended answer and discussion, with annotated image.

STATISTICAL QUESTION

Multistage sampling

Statements *a*, *b*, and *c* are all true.